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Four Rivers Field Office
Morley Nelson Snake River Birds of Prey
National Conservation Area (NCA) South
Travel Management Plan (TMP) and Environmental Assessment (EA)

U.S. Department of the Interior
Bureau of Land Management
Boise District
Morley Nelson Snake River Birds of Prey National
Conservation Area
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CHAPTER 1. INTRODUCTION

The chapter includes information on the project area, the history of the project, the purpose of and need for the project, and the agency's proposal for achieving that purpose and need. This section also details how the Bureau of Land Management (BLM) informed the public of the proposal and how the public responded.

1.1 Background

Comprehensive travel management planning has become one of the top priorities for federal land management agencies over the past decade. Increasing population throughout the western United States, shifts in demographics (age and mobility, amount of available leisure time, proximity of population centers to public lands, etc.) and technological advances in motorized and mechanized transportation (size, power, stability, and ease of control) have outpaced conventional agency transportation planning. From 1982 to 2001, off-highway vehicle (OHV) use, as a type of recreation, increased more than 100% across the United States, estimated at 40 million participants, or 1 in 5 people (Cordell et al. 2005). In Owyhee County, Idaho, alone, OHV registration increased 258% between 1998 and 2014 (Wulfhorst et. Al. 2016), with most use concentrated in motorized areas in the Owyhee Front (e.g., Murphy Subregion Travel Planning Area). Although many public lands have traditionally been open to cross country travel without restriction, these new pressures have necessitated a nation-wide change from passive to active transportation management.

Travel management planning is the proactive management of public access to protect and preserve natural/cultural resources in compliance with travel-related regulations and in accordance with the best land use management principles. It involves a comprehensive approach that considers various aspects of road and trail system planning and management, including natural resource management; road and trail design and maintenance; and recreational and non-recreational uses of roads and trails. Within these contexts, access to and within public lands is evaluated according to the effects of motorized and non- motorized travel on public lands and resources and on the people who use them.

The Omnibus Public Land Management Act of 2009 (123 Stat. 991; Public Law [PL] 111–11; hereafter referred to as OPLMA) directed the BLM to evaluate recreational travel and transportation on public lands in Owyhee County. In light of that mandate, the work required to fulfill it, and other laws and policies which counsel in favor of travel management, BLM has elected to consider non-recreational travel management and planning (such as permittees, lessees, and/or BLM employees performing agency work) in addition to the recreational travel that was the focus of OPLMA. Accordingly, this document considers Comprehensive Travel and Transportation Management (CTTM) planning in the area.

The Boise District Office has split the portion of Owyhee County located within its boundaries into five subregions: Canyonlands East, Canyonlands West, Morely Nelson Snake River Birds of Prey National Conservation Area (NCA) South, Grandview, and Silver City (see Figure A-1 in Appendix A). The existing routes in all the subregions were inventoried beginning in 2004. The route inventory was completed with public involvement and BLM validation in 2011 and 2012.

This Travel Management Plan (TMP) is specific to the Morley Nelson Snake River Birds of Prey NCA South Travel Management Area (hereafter referred to as the NCA South TMA). The NCA South TMA is a subregion within the Four Rivers Field Office (see Figure A-2 in Appendix A).

1.2 Purpose and Need

The purpose of this TMP is to designate a sustainable network of routes that provides for a variety of public recreation opportunities, promote safety for visitors utilizing the network of routes, addresses authorized and resource management access needs; while providing for enhanced resource protections, and brings travel and transportation management in the TMA into conformance with Designation Criteria identified in 43 CFR 8342.1 (see Appendix E for specific Designation Criteria).

The need is based in part on the OPLMA, which directs the BLM to complete a plan for recreational travel management. In addition, the 2015 Idaho and Southwestern Montana Greater Sage-Grouse Approved Resource Management Plan Amendment (hereafter referred to as ARMPA) required new limitations on all travel, which also counseled in favor of new travel management planning, including planning that went beyond simply "recreational" travel. Finally, impacts caused by increased roading and unauthorized routes (including route proliferation on the landscape) added to the need to undertake the development of CTTM plans for public lands in Owyhee County. The CTTM planning being undertaken here will designate a motorized route system that complies with the BLM's national direction in light of increasing OHV use and public demand for access and BLM's regulatory obligation as stated in the Birds of Prey Resource Management Plan (RMP 2008), in addition to balancing protections for natural and cultural resources with the demands for travel on BLM lands. There is a need to reduce the potential for proliferation of user-created routes or the use of routes that have not been evaluated and designated by the BLM for motorized travel.

1.3 Decision to be Made

The TMP will identify a system of all motorized and non-motorized access within the NCA South TMA in Owyhee County. The Decision Record TMP will apply only to federal lands within the TMA. This TMP would ensure that users were aware that motorized travel would only be allowed to occur on routes designated by the BLM for such purpose.

1.4 Scoping and Issues

1.4.1 Scoping

The BLM has taken a variety of steps to inform the public, special interest groups, and local, state, and federal agencies about the NCA South travel management planning process, and to solicit feedback from these interested parties to help shape the scope of this project. In developing the NCA South TMA, the BLM met with a wide range of individuals, organizations and interest groups, including motorcycle groups, recreational aviation, All-Terrain Vehicle (ATV) groups, 4×4 groups, environmental groups, Owyhee County Board of Commissioners, state and federal agencies, Native American tribes, and private landowners.

Route inventory data was updated between 2009-2012, and involved aerial image processing, field GPS validation, public input, working with interested organizations and individuals, and using GIS for corrections. The completed route inventory was posted on the BLM ePlanning website in the fall of 2010. The public was encouraged to participate, provide updates to the inventory, and comment on the process through outreach efforts including public scoping meetings, face-to-face meetings, and field visits. BLM accepted additional route inventory data and public input for approximately six months.

In 2014-2015, BLM spent 200 hours of interdisciplinary effort with BLM and contractor specialists evaluating and designating each individual route in the TMA. The BLM worked with the Owyhee Initiative, Inc. to develop route evaluation criteria. In 2015, the BLM shared the results of route evaluation in the form of four alternatives during a public scoping period. Public scoping meetings related to this environmental analysis took place December 10 and 11, 2015, and an internal scoping meeting by BLM was completed on October 29, 2015. The scoping period lasted from December 7, 2015 to January 15, 2016. In total, 66 individuals and organizations submitted comments that were received at the close of the scoping period. These comments were analyzed and issue statements were developed (see Table D-3, Appendix D for a scoping comment summary). The recommended route designations for four alternative route networks are analyzed within this EA.

The Four Rivers Field Office accepted comments throughout the entire planning process. The types of comments received included identifying mistakes in the inventory; describing the kind of travel system that best suits their needs; administrative access needs; areas of concern; and areas with high recreation values. In some cases, comments received during scoping resulted in changes to the route inventory or designations. Comments identifying specific routes were validated on the ground, through aerial imagery, or with other BLM resource data to ensure that the route (type, condition, and use), the destination (level of use and/or other access options), or the commenters' concerns were defined in enough detail to compare its relevance to the rest of the transportation system. Occasionally, routes submitted by the public were determined to be duplicates of inventoried routes when compared on the same map. Comments identifying a missing or incorrect route that was consistent with the purpose and need, not a duplicate of an inventoried route, and determined to exist would trigger the route evaluation process. In order to maintain consistency within the project record and integrity of each decision, additional evaluations used the same evaluation and designation criteria and database as the original route evaluation effort.

All comments received prior to and during the preparation of this environmental assessment were used to adjust the appropriate alternative(s) and develop the baseline route inventory and project record. There were 89 miles of additional routes submitted by the public and added to Alternative A for evaluation (see Figure A-3 in Appendix A). Additionally, the majority of routes submitted by Idaho Department of Parks and Recreation were incorporated into Alternative A and evaluated. The alternatives were developed after receiving input from the staff, management, cooperating agencies, and the public (as part of the scoping process). Similarly, proposed route designations were modified throughout the evaluation process following input from the staff, management, cooperating agencies, and the public. Throughout the preparation of the EA, the BLM updated the Boise District's Owyhee County travel

management planning website to inform the public of the process, project activities, and availability of the EA.

In November 2016, after incorporating the scoping comments and concerns into this EA and completing analysis, and at the request of the public, the BLM offered a comment period to review the draft EA, maps, and route data on a web-based GIS platform for each alternative. Public review of the NCA South Travel Management Draft EA occurred between November 16 and December 15, 2016. BLM continued to receive comments after the official 30-day comment period closed on December 15. BLM received 58 letters, containing 253 individual comments. Major concerns expressed in public and agency comments included the omission of aviation as a form of recreation and airstrips as part of the motorized route system in the TMP, concerns about access for livestock grazing, concerns about access for recreation (including hunting and trapping), concerns related to the designation of routes for single track users, concerns pertaining to the omission of some routes, and concerns about potential impacts on wildlife species. All comments and their related responses can be found Appendix G. In some cases, comments resulted in modifications to this Final EA.

1.4.2 2023 Travel Planning Updates

Due to a shift in administrative priorities in 2017, the travels plans in Owyhee County were paused. BLM leadership has since directed staff to continue travel planning efforts and update the analysis/plan to reflect the most current information and data. All resources were reviewed, and the analysis incorporated all current data (e.g., new nesting raptor and cultural data). For example, closures were either removed from routes and airstrips that no longer intersected lek buffers due to lack of occupancy or were added to routes that intersected new leks (e.g., new occupied leks since 2014).

Additionally, e-bikes were identified as a mode of transportation and incorporated into the Designation Types. There have been very little studies of the environmental impacts of e-bikes specifically. However, an initial study was undertaken by the International Mountain Bicycling Association to understand some of the physical impacts to trails associated with e-bikes and how they might differ from those associated with traditional mountain bicycles. Some differences between the impacts of Class 1 e-bikes and mountain bicycles were observed, particularly at turns and grade changes. Soil displacement measured in this study was not significantly different (statistically) from that associated with mountain bikes and was much less than that associated with motorcycle use (IMBA 2015). Due to limited non-motorized trail designations in the NCA South TMP, as well as lack of e-bike environmental impact studies, e-bikes would not be authorized on designated non-motorized trails.

Lastly, the description for ATV/UTV designations was changed from 50 inches or less to 65 inches or less. This width determination was based on current UTV manufacture specifications for both the utility and sport models, with most machines on the market meeting this width.

1.4.3 Issues

Through the internal and external scoping process, issues were identified and brought forward for analysis outlined in Table 1.

Table 1. Issues Analyzed in Detail

Resources	Issue Statement
Soils	How would the designed travel route network influence the potential for soil erosion?
Vegetation, Special Status Species, Noxious Weeds Invasive Plants	How would the designated travel route network impact native vegetation, special status species, and noxious weeds/invasive plants in the TMA?
Hydrology	How would the designated travel route network impact aquatic resources in the TMA?
Wildlife	How would the designated travel route network impact wildlife (e.g., special status species, migratory birds, raptors, big game) in the TMA?
Cultural Resources	How would the designated travel route network impact cultural resources in the TMA? How would the designated travel route network impact the Oregon National Historic Trail (NHT)?
Recreation	How would the designated travel route network impact recreation opportunities, experiences, and access?

1.4.3.1 Issues Not Presented in Detail

What are the effects on air quality in the planning area? As motorized use in the planning area is currently low and dispersed and is not anticipated to increase to a great degree due to the remote nature of the area, implementation of any of the alternatives would not result in the production of vehicle or equipment emission, or particulate matter, above incidental levels as required by the Clean Air Act, as amended.

What are the effects of noise in the planning area? As motorized use in the planning area is currently low and dispersed, implementation of any of the alternatives would not result in significant changes in effects from noise; the occasional, short-term nature of noise associated with low levels of motorized use would only shift in location (routes used) between action alternatives.

What are the effects on fire and fuels management in the planning area? In accordance with 43 CFR 8340.0-5, travel management designations exclude military, fire, emergency, or law enforcement vehicles being used for emergency purposes, and would therefore allow motorized travel cross-country for the purpose of fire suppression. This resource was considered during route evaluation and designation, and the designation of a motorized route system would result in a beneficial effect on access for fire suppression activities and future fuel break planning; however, fire and fuels management does not inform the decision.

What are the effects on visual quality and visual resource management in the planning area? Visual resources were considered during route evaluation, however designation of routes in this TMA would have no impact on visual resources. Developing a defined transportation network of designated routes within the analysis area would not impair visual resources because there would be no changes in line, form, texture, or contrast to the characteristic landscape from designation of routes. New route construction is not part of the proposed action or other alternatives. There would be an overall beneficial impact to visual quality across the planning area as a result of route closures under all the action alternatives.

What are the effects on range resources in the planning area? Motorized access to livestock facilities or other areas important for livestock management (e.g., salting, trailing) was considered during route evaluation and designation. There would be a net decrease in available miles of routes across all the action alternatives; however, as necessary, motorized access in addition to that provided under any alternative would be addressed with case-specific requests by permittees and if warranted, approved by the BLM authorized officer. These authorizations would be temporary for addressing maintenance issues and would not change the long-term route designations.

What are the effects on land use in the planning area? Access for land use activities was considered during route evaluation and designation, and route designations under each action alternative maintain motorized access to valid existing rights within the TMA. Motorized access for future land use activities would be addressed within the permitting process and evaluated under a separate NEPA process; therefore, motorized access for land use activities does not inform the BLM's decision.

What are the effects on known paleontological resources in the planning area? Paleontological resources were considered during route evaluation and designation, and while the designation of a motorized route system would result in overall minor beneficial impacts to known paleontological localities, these resources are sparsely distributed across the TMA and do not inform the decision.

Would the action alternatives result in disproportionately high and adverse impacts to low-income or minority communities? An environmental justice baseline analysis was conducted and it was determined that there are environmental justice communities present in the study area. According to BLM guidance (IM 2022-059 and attachments), the BLM is committed to determining if its proposed and alternative actions would adversely and disproportionately impact minority, low-income, or Tribal populations. To determine if an action or alternative disproportionately and adversely impacts an EJ population, the BLM analyzes aggregate effects of all proposed actions and resources and cumulative effects of all proposed actions when compounded by an impact when added to other past, present, and reasonably foreseeable future actions. NCA South TMP impacts concerning soil, vegetation, hydrology, cultural resources, and wildlife will not disproportionately and adversely impact study area environmental justice communities. There is always potential for environmental justice communities to suffer disproportionate and adverse impacts through decreased recreation access. However, all alternatives maintain access to the NCA South study area and some alternatives offer varying levels of opportunities for more diverse non-motorized and dispersed recreational activities. As such, no disproportionate and adverse impacts to environmental justice communities are anticipated and impacts (including cumulative impacts) to environmental justice communities are not discussed further in this EA.

What are the effects on economics and social values in the planning area? All actions and alternatives associated with the NCA South TMP have the potential to result in small, localized impacts to Owyhee County's economics and social values. While there would be adverse impacts to motorized recreation under all action alternatives, the potential social and economic impact of route reductions are significantly minimized by reductions in environmental degradation and greater opportunities for diverse non-motorized recreation. OHV recreation will

continue in the study area under all alternatives and there are sufficient alternate OHV trails in neighboring TMAs within Owyhee County. Moreover, alternatives B, C, and D offer opportunities for ecosystem regeneration and will improve non-market ecosystem services and sense-of-place valuations and support more resilient agricultural and ranching landscapes. As access for livestock grazing and other valid existing rights would be retained under all action alternatives, there would be no adverse impacts to economics and social values related to Owyhee County's ranching landscape.

CHAPTER 2. ALTERNATIVES

This chapter provides a detailed description of the No Action and Action Alternatives; the Action Alternatives are methods for achieving the stated purpose. These alternatives were developed based on an interdisciplinary planning effort and issues raised by the public and other agencies during project scoping efforts.

2.1. Travel Management Planning Designations

A BLM interdisciplinary team (ID Team) explored and evaluated alternatives to provide a range of travel management options that would meet the underlying need for the action, as presented in Section 1.2 of this EA. The ID Team began the route evaluation process by first defining the size, popularity, and condition of the route, identifying its uses (commercial, administrative, property, economics, and public uses), and determining the presence of special resource concerns. For each route, the ID Team also considered and addressed the 43 CFR 8342.1 Designation Criteria (see Appendix E), selecting applicable rationale demonstrating how the route would minimize impacts for each of the route's preliminary alternative designations. The ID Team used route characteristic information to make decisions on a route-by-route basis that would balance this information and led to the design of the route network that offers a range of reasonable action alternatives. This EA addresses the No Action (Alternative A) and three action alternatives: Alternatives B, C, and D. The No Action Alternative is analyzed to provide a baseline for comparing the impacts of the action alternatives.

This TMP includes elements of inventory, route designation, transportation system planning, and implementation decisions. The BLM solicited public review and input on the route inventory during public scoping. The route system proposed under each alternative has been designed to create a range of access opportunities, by both motorized, non-motorized, and non-mechanized means, while protecting important resources. To meet these objectives, some routes identified during the route inventory are proposed to be closed to motorized use, others are reserved for administrative or authorized motorized access only, and the rest would remain open for public motorized use, of which some would be subject to seasonal closures. All the alternatives, except Alternative A (No Action), would close some routes to motorized vehicles. Segments of certain routes cross state and private land and the BLM acknowledges that it only has jurisdiction over routes on BLM-administered land. Thus, only routes on BLM-administered lands are addressed and will be designated in this TMP.

2.1.1 Designation Types

The alternatives analyzed in this EA include a variety of route designation types. These designations specifically address where OHVs are authorized (reference 43 CFR 8340 for OHV definition). Although designations are labeled using the 'OHV' reference per the CFR, the term encapsulates motorized vehicles in general and should not be confused to only mean off-highway vehicles. The route designation types also describe the kind of user that can utilize the route, how the use can occur, and when access to the route is allowed. These designations also apply to airstrips. For the NCA South TMP, the public OHV designation for any given route falls into one of the following categories:

- OHV-Open – Open year-round to all motorized vehicle travel.
- OHV-Limited – Public motorized vehicle use limited to specified vehicle type, width, or mode of travel. This category also includes routes that are limited to authorized or administrative use only and may provide access to communication sites, grazing facilities, wildlife water developments, etc.
- OHV-Closed – Route not available for any motorized vehicle use.

Designation types are also summarized and cross referenced to 43 CFR 8340 in Table 2.1. Area and route designations, with the exception of designated wilderness areas, do not apply to vehicles being used by members of the Shoshone-Bannock Tribes or Shoshone-Paiute Tribes to access traditional use areas of importance to the tribes or to vehicles being used by members of the Shoshone-Bannock Tribes to exercise their tribally reserved treaty rights. Additionally, snowmobiles or machines designed for over snow use are OHVs, so OHV route designations in the NCA South TMP apply to snowmobile use as well. Cross-country travel for over snow vehicles is not authorized. Snowmobile use in Owyhee County is low due to lack of favorable terrain and winter conditions compared to nearby Valley, Boise, and Elmore Counties (Black et al. 2017). Aircraft are also considered an OHV, and therefore surface use would be restricted to existing routes and identified airstrips. There are no identified airstrips on BLM-managed lands with the NCA South TMA, though there are airstrips on private land. Descriptions for the divisions of the three aforementioned OHV designations that were applied to the routes include:

- Open: Routes where all types of motorized and mechanized vehicle use are permitted at all times, and subject to the operating regulations and vehicle standards set forth in 43 CFR 8341 and 8342.
- Seasonal Closure: Routes that are closed to public motorized and mechanized use with timing restrictions. Within the NCA South TMA, seasonal closures would be implemented to protect one resource: raptor nesting, primarily golden eagles (January 15-July 31, for 24 hours a day). Based on annual monitoring, routes could open earlier if raptors have fledged from the nests before July 31. Seasonal closures are subject to valid and existing rights and previously authorized uses and excludes established partners monitoring nesting raptors or other wildlife populations.
- ATV/Utility Terrain Vehicle (UTV): Routes that are restricted to use by technical 4x4-capable motorized vehicles, including motorcycles and e-bikes, that are 65 inches or less.

This width determination was based on current UTV manufacture specifications for both the utility and sport models, with most machines on the market meeting this width. Routes designated as ATV/UTV are subject to seasonal closures and ongoing monitoring.

- Single Track: Routes that are restricted to use by motorcycle, E-bikes (Class I, 2, 3 as defined in Secretarial Order 3376), bicycles, and non-motorized users. Routes designated as Single Track are also subject to seasonal closures and ongoing monitoring.
- Authorized only: These routes are available to the public for non-motorized travel only. Routes designated for authorized motorized use only. This authorized use, often termed "administrative access," is for motorized travel for purposes specifically related to completing Bureau work or specific work completed by a permittee associated with an approved BLM right- of-way or permit. Authorizations may be granted on a case-by-case basis with written approval from the BLM authorized officer with the exception of valid existing rights including Rights-of- Way, current easements, livestock grazing, and access to active mining claims.
- Non-motorized: Routes limited to non-motorized uses, such as bicycle, horseback, or hiking, and are subject to seasonal closures. E-bikes are not authorized on designated non-motorized routes.
- Non-mechanized: Routes limited to non-mechanized uses, such as horseback or hiking. Routes subject to seasonal closures.
- Closed: Routes closed to motorized use due to resource concerns or conflicts.

Regardless of travel route designations, visitors can walk or horseback ride anywhere on BLM-managed lands within the NCA South TMP (on routes or cross-country). However, mountain bikes (mechanized use) are limited to designated route travel.

Table 2.1. Designation Type Cross Reference to OHV Designation per 43 CFR 8340

Designation Type	43 CFR 8340 (OHV Designation)
Open	OHV Open
Seasonal Closure	Limited to seasonal use (OHV Limited)
ATV/UTV	Limited to ATV/UTV use (OHV Limited)
Single Track	Limited to motorcycles, including Class 1,2,3 e-bikes (OHV Limited)
Authorized Only	Limited to authorized use (OHV Limited)
Non-Motorized	Limited to non-motorized use (OHV Closed)
Non-Mechanized	Limited to mechanized use (OHV Closed)
Closed	OHV Closed

2.2 Alternative A (No Action Alternative)

This alternative represents the current management condition, as described in the Birds of Prey RMP, and this EA uses it for baseline comparative purposes. Travel is currently allowed on existing roads, primitive roads, airstrips, and trails (see Figure A-4 in Appendix A). The route designations under this alternative are displayed in Table 2.2.

Approximately 428 miles of routes would continue to be available for motorized recreation in this alternative. Any proposed closures or restrictions of existing routes to prevent resource damage or user conflicts would be reviewed and implemented subject to special rules provided under 43 CFR 8340. Formal proposals for new roads or trails would be evaluated in a site-specific EA. Cross-country travel on foot and horseback would continue to be allowed.

Table 2.2. Route Designations – Alternative A (No Action)

Designation	Mileage	Definition
Open	428	Open to public motorized use.
Limited	20	Motorized vehicle travel on designated areas, routes, roads, vehicle ways, and trails is subject to restrictions.
Total	**448**	

2.3 Action Alternatives

2.3.1 Applicable Resource and Route Management Guidance

The BLM applies the management recommendations and Desired Future Conditions for Transportation Planning as specified in the 2009 OPLMA and the 2015 ARMPA. Resource and route management prescriptions from the 2008 Snake River Birds of Prey NCA RMP are applicable (see Section 2.5 and Appendix E). These management recommendations and Desired Future Conditions provide the objective for route management within the NCA South TMP and were considered during the route evaluation and designation process. Detailed information for each route can be found in the route reports in the project record. Progress in meeting these objectives will be determined through monitoring (see Appendix F). The specific guiding documentation and route management objectives applicable to this TMP are detailed in Appendix E.

2.3.2 Criteria for Action Alternatives Development

The route inventory was updated between 2009-2012 and the public was provided an opportunity to comment and contribute routes to the inventory for evaluation and designation starting in 2010 (see Figure A-3 in Appendix A for routes incorporated into Alternative A). Public and stakeholder input, as well as the need to conform with guidance contained in applicable land use plans and regulations (including those contained in 43 CFR 8342.1) and guidance contained in BLM's Travel and Transportation Management Handbook (BLM 2012) informed the ID Team's

development of a reasonable range of alternatives to present to the public during the scoping period. Conformance with BLM's motorized route designation criteria (34 CFR 8342.1) can be found in Appendix E. The reasonable range of alternatives offers a distinct range of management strategies that respond to the purpose and need (see Section 1.2), and includes a maximum resource protection alternative, a maximum public access alternative, and a hybrid alternative that balances resource protection with the need for public motorized access.

Maintaining access for the multitude of activities that occur within the TMA was considered a priority when developing the action alternatives, with a tendency not to designate routes as limited or closed if the routes were identified as high use and/or improved, provide access to non-BLM-managed lands, connected to other routes with similar designations, provided access to remote reservoirs, accessed military facilities and sites, accessed active mineral and mining locations, are used for livestock operations (e.g., trailing or salting) or accessed livestock facilities that require frequent access, are routes with current rights-of-way, or are cherry-stem and boundary routes that provide access to wilderness areas.

Important or sensitive resources were considered in proposing closed or limited route designations for each action alternative. Route proximity to these resources, either alone or in combinations, would trigger a seasonal restriction, limited to authorized use, or closed route designation, and may include wildlife use, cultural or historic resources, sensitive plant species, redundant routes, highly erosive soils, multiple crossings of ephemeral waterways and washes, perennial water and fisheries, and/or wet meadow habitats. Routes that would be closed, seasonally restricted, and/or limited to authorized use across all action alternatives are those that occur in proximity to habitats critical to survival of wildlife species, including Greater sage-grouse lekking areas, bighorn sheep lambing areas, and big-game winter habitat.

2.3.3 Alternative B

This alternative is designed to provide maximum resource protection while still providing reasonable motorized access. The primary management emphasis would be the protection and enhancement of natural resource values through a substantial reduction in the travel routes available for motorized or mechanized use. This alternative reduces the potential for human uses and influences resulting from the presence and use of routes to affect known sensitive resources. Reclamation of closed routes would be prioritized based on wildlife habitat, soil loss potential, cultural resource impacts, or other resource protection needs.

This alternative would provide the lowest number of designated travel routes within the planning area (See Figure A-5 in Appendix A). The alternative protects access to valid existing rights, allows for necessary OHV access for authorized users, and for administrative purposes, such as maintenance of authorized utilities/facilities, range improvements and mining claims. A summary of the route designations and associated mileage for Alternative B is described in Table 2.3.

Table 2.3. Route Designations – Alternative B

Designation	Mileage*	Definition
Open	148	Open to public motorized use.
Seasonal Closure	4	Closed to public motorized use during certain seasons or times.
ATV/UTV	1	Limited to use by technical 4x4 capable motorized vehicles, 65 inches or less.
Single Track	1	Limited to single track uses, such as motorcycle, bicycle, or e-bikes.
Non-motorized	2	Limited to non-motorized uses, such as bicycle, horseback, or hiking (no e-bikes).
Non-mechanized	<1	Limited to non-mechanized uses, such as horseback or hiking
Authorized Only	58	Limited to administrative motorized use.
Authorized Only, Seasonal Closure	14	Limited to administrative motorized use but closed to administrative motorized use during certain seasons or times.
Closed	221	Motorized use prohibited.
Total	**448**	

2.3.4 Alternative C

This alternative is designed to balance motorized access with the protection of the area's natural and cultural resources. The primary management emphasis is to provide the public with motorized opportunities while protecting critical soils, crucial wildlife habitat, sensitive plants, cultural and historic resources, and authorized mining activities. It balances resource protection with ongoing human uses and their influences, which could impact sensitive resources from the presence or use of routes.

This alternative protects access to valid existing rights and allows for necessary OHV access for specific users for administrative purposes, such as maintenance of authorized utilities/facilities, range improvements and mining claims (see Figure A-6 in Appendix A). A summary of the route designations and associated mileage for Alternative C is described in Table 2.4.

Table 2.4. Route Designations – Alternative C

Designation	Mileage*	Definition
Open	203	Open to public motorized use.
Seasonal Closure	7	Closed to public motorized use during certain seasons or times.
ATV/UTV	8	Limited to use by technical 4x4 capable motorized vehicles, 65 inches or less.
Single Track	9	Limited to single track uses, such as motorcycle, bicycle, or e-bikes.
Non-mechanized	10	Limited to non-mechanized uses, such a horseback, or hiking; but closed during seasons or times.
Non-motorized	21	Limited to non-motorized uses, such as bicycle, horseback, or hiking (no e-bikes).
Authorized Only	57	Limited to administrative motorized use.
Authorized Only, Seasonal Closure	2	Limited to administrative motorized use but closed to administrative motorized use during certain seasons or times.
Closed	132	Motorized use prohibited.
Total	**448**	

2.3.5 Alternative D

This alternative is designed to be the least restrictive to motorized public access while providing reasonable protection to priority and high priority natural and cultural values. The emphasis for this alternative would be to provide for continued motorized access while maintaining the integrity of existing vegetation, and while improving resource conditions through route closures in areas with existing resource damage or serious visitor conflict.

This alternative would designate the highest number of route miles within the planning area (see Figure A-7 in Appendix A) and close the fewest miles of routes. These designations would maintain the maximum amount of access to valid existing rights, OHV access for specific users for administrative purposes, and the greatest level of public motorized access for recreation. A summary of the route designations and associated mileage for Alternative D is described in Table 2.5.

Table 2.5. Route Designations – Alternative D

Designation	Mileage*	Definition
Open	283	Open to public motorized use.
Seasonal Closure	12	Closed to public motorized use during certain seasons or times
ATV/UTV	4	Limited to use by technical 4x4 capable motorized vehicles, 65 inches or less.
Single Track	42	Limited to single track uses, such as motorcycle, bicycle, or e-bikes.
Non-motorized	21	Limited to non-motorized uses, such as bicycle, horseback, or hiking (no e-bikes).
Non-mechanized	<1	Limited to non-mechanized uses, such as horseback or hiking
Authorized Only	31	Limited to administrative motorized use.
Closed	56	Motorized use prohibited.
Total	**448**	

2.3.6 Alternatives Considered but Not Analyzed in Detail

R.S. 2477 Alternative. Numerous public comments have discussed issues surrounding Revised Statute (R.S.) 2477 assertions, and as such, the BLM considered an alternative that designates all routes associated with R.S. 2477 assertions as open. R.S. 2477 is a section of the Mining Act of 1866 that granted "the right-of-way to the State for construction of highways over public lands not reserved for public uses." It was repealed by the Federal Lands Policy and Management Act in 1976. The extent and nature of the rights-of-way granted by R.S. 2477 and the access routes that qualify as highways for the grant are in dispute. Some members of the public regard R.S. 2477 rights-of-way as important components of state and local infrastructure, and as essential to the economic growth and social well-being of western communities. Others are concerned that recognition of extensive R.S. 2477 rights-of-way would interfere with the BLM's ability to protect and manage wilderness values and other resources on public lands.

In the NCA South Travel Management Plan, Alternative A designates existing routes that Owyhee County asserts are R.S. 2477 "highways" as open. In some cases, routes the County identified could not be field verified and therefore were not included in the alternative. However, while Alternative A includes routes claimed as R.S. 2477 highways, a travel management plan is not intended to provide evidence, bearing on, or address the validity of any R.S. 2477 assertions. R.S. 2477 rights are determined through a process that is entirely independent of the BLM's planning process. Consequently, NCA South TMP did not take into consideration R.S. 2477 evidence, or make determinations as to the validity of those claims because it was beyond the scope of this EA. The BLM bases travel management planning on purpose and need related to resource uses and associated access to public lands and waters giving consideration to the relevant resources. At such time as a decision is made on R.S. 2477 assertions, the BLM will adjust its travel routes accordingly.

Complete Route Closure Alternative. The BLM considered an alternative that would not designate any routes available for motorized recreational use. Although this alternative would provide the maximum protection of natural resources in the "limited" OHV category area, it

would be at the expense of the motorized recreating public. The Birds of Prey NCA RMP directs the subject lands to be in a "limited to designated roads and trails" OHV category. This category allows for OHV use on certain routes that have been designated for that use. Closing all routes to such use would not be in conformance with the Birds of Prey NCA RMP. In effect, the "limited" OHV area would become a de facto "closed" OHV area and would require a land use plan amendment to implement this alternative in its entirety. In addition, it would not meet the purpose and need of this TMP. Furthermore, closing all routes in the "limited" area would block access to other areas that remain "open" to OHV use. For these reasons, this alternative is not a viable alternative to carry forward for detailed analysis.

Recreational-Only Alternative. The BLM considered an alternative that would designate a system of motorized routes for public recreational use and not restrict motorized cross-country travel for administrative use, instead of undertaking CTTM. As the ARMPA limited all motorized travel (including both recreational and administrative) to existing routes where travel management planning has not been completed or is in progress, BLM would not be able to allow wholesale cross-country motorized travel for administrative use without a land use plan amendment that would override the existing current management direction for motorized travel in the TMA. Furthermore, allowing administrative cross-country travel would not meet the designation criteria, as contained in 43 CFR 8342.1, nor the ARMPA MD TTM 4.

2.4 Summary of Route Mileage for all Alternatives

Table 2.6 includes a summary of the route mileage of the No Action Alternative and three action alternatives described above, providing a comparison of miles of routes and number of airstrips that would be designated under each of the alternatives.

Table 2.6. Route Mileage and Airstrip Summary, by Alternative

Route Mileage				
Designation	**Alternative A**	**Alternative B**	**Alternative C**	**Alternative D**
Open	428	148	203	283
Limited	20	0	0	0
Seasonal Closure	0	4	7	12
ATV/UTV	0	1	8	4
Single Track	0	1	9	42
Non-mechanized	0	<1	10	<1
Non-motorized	0	2	21	21
Authorized Only	0	58	57	31
Authorized Only, Seasonal Closure	0	14	2	0
Closed	0	221	132	56
Total	**448**	**448**	**448**	**448**

2.5 Compliance and Conformance

This alternatives included in this EA conform to the following plans (see Appendix E for a more detailed description):

- Snake River Birds of Prey National Conservation Area Resource Management Plan as required by 43 Code of Federal Regulations (CFR) 1610.5.
- Idaho and Southwestern Montana Greater Sage-Grouse Approved Resource Management Plan (Management Direction [MD] TTM1, MD TTM 4) as required by CFR 1610.5 (BLM 2015a).

2.5.1 Relationship to Statutes, Regulations, or Other Plans

This section lists applicable statutes, regulations, and other plans to this TMP and Environmental Assessment (EA); see Appendix E for a more detailed discussion.

- National Environmental Policy Act of 1969 (NEPA), PL 91-190, 42 United States Code (USC) 4321-4370(e) as amended and BLM NEPA Handbook (H-1790-1) (BLM 2008)
- Federal Land Policy and Management Act of 1976 (FLPMA), as amended
- 43 CFR 8342, Designation of Areas and Trails
- Executive Order (EO) 11644 (February 8, 1972), as amended by EO 11989 (May 24, 1977)
- BLM Land Use Planning Handbook (H-1601-1) Appendix C
- BLM Travel and Transportation Handbook (H-8342) and Manual (M-1626)
- Endangered Species Act of 1973 (ESA), Section 7, as amended
- The Bald and Golden Eagle Protection Act of 1940, as amended
- The Migratory Bird Treaty Act of 1918 (MBTA)
- National Historic Preservation Act of 1966, as amended (NHPA)
- 2014 State Protocol Agreement between Idaho State Historic Preservation Office and the BLM
- Fort Bridger Treaty of 1868 (15 Stat. 673)
- EOs 11593, 13007, and 13175
- Antiquities Act of 1906
- Archaeological Resource Protection Act (ARPA)
- American Indian Religious Freedom Act (AIRFA)
- Native American Graves Protection and Repatriation Act (NAGPRA)

- Paleontological Resources and Preservation Act (PRPA) (16 USC 470aaa-11)
- Environmental Justice (Executive Order 12898)
- EO 13807 and Secretarial Order (SO) 3355

CHAPTER 3. AFFECTED ENVIRONMENT AND ENVIRONMENTAL IMPACTS

This chapter describes the existing conditions relevant to the issues presented in Section 1.4.3 and discloses the potential impacts of the proposed action and alternatives."

General Setting

The NCA South TMA is located along the Snake River in southwest Idaho and encompasses 196,334 acres (see Figure A-2 in Appendix A). The TMA is within the Morley Nelson Snake River Birds of Prey NCA and is a mixture of land management jurisdictions and includes lands managed by the BLM (112,087 acres), the State of Idaho (10,804 acres), Bureau of Reclamation (5,252 acres) and private landowners (64,626 acres). The landscape includes the Snake River canyon corridor; the Snake River is impounded in locations, creating large reservoirs. Two characteristic landscapes are present within the NCA South TMA: Snake River Plain/Plateau and Snake River Canyon. The Snake River Canyon and the low-lying lands in the floodplain are primarily used for agriculture, including center-pivot irrigation. The uplands of the Snake River Plateau are primarily used for grazing and recreation. The Bruneau River flows into the Snake River at C.J. Strike Reservoir from the Bruneau Valley, located at the southeastern corner of the NCA South TMA.

The NCA South TMA planning area can be characterized as sparsely populated. The area is approximately a 90-minute drive from the city of Boise. An existing route network enables public and private access to a variety of lands. Due to the TMA having limited opportunities for north-to-south travel (only five bridges cross the Snake River within the TMA—two footbridges and three vehicle bridges), most of the existing road network parallels the Snake River. The elevation of the TMA varies from over 3,000 feet near the Bruneau dunes in the eastern portion of the TMA to under 2,200 feet along the Snake River in the northwestern portion.

The existing transportation system within the NCA South TMA includes three state highways, county roads, private routes, and approximately 448 miles of BLM-administered roads, which are identified as routes. The major roads include Idaho State Highways 78 (Owyhee Highway), 167, and 51 (see Figure A-2). There are two small towns in the TMA, Bruneau and Grand View, as well as numerous private ranches located throughout.

3.1 Issue 1: Soils- How would the designated travel route network influence the potential for soil erosion in the TMA?

3.1.1 Affected Environment

The soils in the planning area are extremely diverse, resulting from the variability in parent materials, slope, aspect, elevation, climate, and vegetative communities. Five soil units compose approximately 25% of the soils in the TMA, briefly described in Table B-1 in Appendix B. Soils

information for the planning area was obtained from the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) soil surveys for Owyhee County (NRCS 2016). The dominant soil orders in the Owyhee High Plateau Major Land Resource Area (MLRA) are Aridisols and Mollisols. The soils in the area dominantly have a mesic or frigid soil temperature regime, an aridic or xeric soil moisture regime, and mixed or smectitic mineralogy. They generally are well drained, clayey or loamy, and shallow or moderately deep.

Soils that would be affected by the action alternatives can be classified into two distinct types: 1) gravel and sandy loams and 2) clay and silt loams. Generally, gravel and sandy loams occur in the Snake River Plains MLRA, while clay and silt loams are primarily located in the Owyhee High Plateau MLRA within the project area. The USDA NRCS provides maps and full descriptions of both these MLRAs (NRCS 2006).

The NRCS Soil Survey of Owyhee County Area, Idaho (NRCS 2016) describes the occurrence and characteristics of these soil types in detail. Compaction of soils has the potential to reduce soil porosity and permeability, and soil types that are most susceptible to compaction are loamy sands and gravelly soils with a wide range of particle sizes (Webb and Wilshire 1983). Erosive soils are more susceptible to accelerated erosion than other soils because they are inherently less stable. Soils in the TMA with the highest potential for erosion include types of soils with sandy loam or gravelly surface textures (Lovich and Bainbridge 1999). Susceptibility of soil types to erosion can be estimated using the K factor. K factor is a soil erodibility factor which represents both susceptibility of soil to sheet and rill erosion by water, and can be grouped in low, medium, and high erosion risk groups. In the TMA, roughly 37% of soils (72,825 acres) fall within the high erosion risk group, 48% (94,949 acres) fall within the medium erosion risk group, 9% (18,199 acres) fall within the low erosion risk group, and 5% (10,351 acres) of soils have an unknown risk for erosion (NRCS 2016) (see Table B-2, Appendix B for route miles by K-factor range).

3.1.2. Environmental Impacts

3.1.2.1 Impacts of Alternative A

The analysis area for impacts to soil resources consists of the motorized route network. Impacts are considered in terms of miles of routes on identified erosive soils, and total overall miles of routes across the TMA. Mechanical disturbance of soils from motorized vehicle activities could result in soil compaction, diminished water infiltration, impaired or diminished function of soil stabilizers such as biotic soil crusts and accelerated erosion rates causing rills and gullying. Compaction of soils has the potential to decrease the infiltration of surface water as well as inhibiting the growth of root systems, thus increasing precipitation runoff; as the precipitation runoff rate increases, rates of soil erosion are accelerated, leading to the formation of erosional features, such as rills, gullies, or washouts, on road surfaces. In addition, dry, powdery soils may be susceptible to wind erosion where vegetation has diminished as a result of vehicle travel.

There are currently 144 miles (33% of the current system) of unpaved routes that occur on soils that have a high risk for erosion (high K-factor range) and 239 miles (55% of the current system) of unpaved routes that occur on soils that have a medium risk for erosion (medium K-factor). Impacts from motorized use would be more severe on the 438 miles of unpaved routes, as these

soils are more sensitive to disturbance since they include types of soils with sandy loam or gravelly surface textures (see Table B-2, Appendix B for route miles by K-factor range). Continued motorized use of existing routes would continue to contribute to localized soil erosion and result in loss of site productivity and sediment delivery to hydrologic systems.

3.1.2.2 Impacts of Alternative B

This alternative would have the greatest reduction in expected erosion within the TMA. Under Alternative B, 57 of the 144 miles of routes (40%) in soils with a high K-factor range and 133 of the 239 miles of routes (56%) in soils with a medium K-factor range would be designated as closed or non-motorized, reducing impacts of motorized use on routes after they revegetate. Another 162 miles of routes outside of highly erosive soil areas would also be designated as closed or non-motorized (see Table B-3, Appendix B for miles of motorized routes by K-factor range). Alternative B would reduce motorized use on routes with high or medium erosion risk by 50%. While impacts would be similar to Alternative A on routes designated for motorized use, the closure or non-motorized designation routes on high or medium erosive soils would prevent further degradation and provide a major, long-term benefit to sensitive soils resources. Natural revegetation of the 221 overall miles of routes that would be designated as closed would stabilize soils and decrease the potential for erosion. Non-motorized designation of overall miles of routes would result in revegetation of a portion of route width and reduce adverse soils impacts. An overall reduction of route miles could decrease the rate of soil erosion occurring and prevent the formation of erosional features across the TMA. The retained motorized routes would be susceptible to soil erosion and compaction; however, the severity of impacts across the TMA with this alternative would be decreased compared to current conditions.

3.1.2.3 Impact of Alternative C

Under Alternative C, 43 of the existing 144 miles of routes (30%) that occur in soils with a high K-factor range and 99 of the 239 miles of routes (41%) in soils with a medium K-factor range would be designated as closed or non-motorized. Another 117 miles of unpaved routes occurring outside of highly erosive soil areas would also be designated as closed or non-motorized. Approximately 278 miles of unpaved motorized routes would be retained for motorized use (see Table B-4, Appendix B for miles of motorized routes by K-factor range). Alternative C would reduce motorized use on routes with high or medium erosion risk by 37% compared to 50% under Alternative B.

3.1.2.4 Impacts of Alternative D

Under Alternative D, 21 of the existing 144 miles of unpaved routes (14%) that occur in soils with a high K-factor range and 45 of the 239 miles of routes (19%) in soils with a medium K-factor range would be designated as closed or non-motorized. Another 55 miles of unpaved routes occurring outside of highly erosive soil areas would also be designated as closed or non-motorized. Approximately 362 miles of unpaved routes would be retained for motorized use (see Table B-5, Appendix B for miles of motorized routes by K-factor range). Alternative B would reduce motorized use on routes with high or medium erosion risk by 17% compared to 50% under Alternative B or 37% under Alternative C.

3.2 Issue 2: Vegetation, Special Status Species, and Noxious Weeds and Invasive Plants- How would the designated travel route network impact native vegetation, special status species, and noxious weeds/invasive plants in the TMA?

3.2.1 Affected Environment

Vegetation

Vegetation is an important biotic component of the landscape because it stabilizes watersheds and provides cover, browse, nesting, and rearing habitat for a diverse assemblage of wildlife and multiple uses. Vegetation also aids in maintaining healthy watersheds and streams by protecting soils, regulating stream flows, and filtering sediments from water. Distinct vegetation communities within the TMA are influenced by characteristics such as soil depth, texture, and chemistry; climate variables, particularly temperature, total and seasonal distribution of precipitation and wind; and topographic features, most importantly elevation, aspect, and slope. Plant communities respond to other environmental influences, such as wildlife and livestock foraging, rodent burrowing, and fire. Plants themselves also influence soil chemistry and soil resistance to wind and water erosion.

The TMA is located in a semi-arid steppe climate with little annual rainfall and wide variation in temperatures throughout the year. Sagebrush communities within the TMA analysis area occur in smaller, more isolated patches than the salt desert scrub, and are often interspersed with exotic plant communities. Sagebrush (*Artemisia* sp.) has an understory that is dominated by Sandberg bluegrass (*Poa sandbergii*) and/or other native perennial bunchgrasses. Cheatgrass (*Bromus tectorum*) and bur buttercup (*Ceratocephala testiculata*) are usually present in these areas to some degree and may be co-dominants with native species. Cryptobiotic soils are an important component of these sagebrush communities. Salt desert shrub communities occur on alkaline soils in lower precipitation zones and are dominated by shadscale (*Atriplex confertifolia*), with varying amounts of other shrubs. Perennial bunchgrasses and several species of forbs form the understory. Common forbs of the salt desert scrub community include globemallow (*Sphaeralcea* sp.), larkspur (*Delphinium* sp.), evening primrose (*Oenothera* sp.), and hairy wild cabbage (*Caulanthus pilosus*).

Exotic annual communities are co-dominated by Sandberg bluegrass and cheatgrass, and occur on a variety of soils. They are primarily the result of wildfires in shrub communities that had previously had relatively intact Sandberg bluegrass understories. Russian thistle (*Salsola tragus*) and tumble-mustard (*Sisymbrium altissimum*) are common annual species that invade after disturbances such as fires and alter the vegetation communities. Greasewood (*Sarcobatus vermiculatus*) is a common large shrub on saline bottoms just above the Snake River, and is often also found along watercourses through salt desert shrub habitat. Saltgrass (*Distichlis spicata*) and Great Basin wildrye (*Leymus cinereus*) are the native grasses most often found with greasewood.

Riparian areas are vegetated with emergent vegetation types; the transition zone at the edge of the riparian area is often dominated by sagebrush. The riparian areas of the Snake River and associated tributaries within the TMA analysis area are generally vegetated by a diverse mix of native and exotic plant species. Native species include cattails (*Typha* sp.), phragmites

(*Phragmites* sp.), sedge species, bulrush species (*Scirpus* sp.), grasses and forbs, willow species (*Salix* sp.), currant, rose, poison ivy (*Toxicodendron radicans*), and dogwood (*Cornus* sp.). Native and exotic trees are also present, and include cottonwood (*Populus* sp.), western juniper (*Juniperus occidentalis*), green ash (*Fraxinus pennsylvanica*), silver maple (*Acer saccharinum*), boxelder (*Acer negundo*), netleaf hackberry (*Celtis reticulata*), and skunkbush (*Rhus trilobata*). Steeper banks where the river is entrenched may have little or no hydric vegetation except for coyote willow (*Salix exigua*), and are often occupied by xeric upland species instead, such as greasewood, sagebrush, and skunkbush. Table B-6 in Appendix B provides general vegetation classification and proportions for the TMA as defined by Tagested and Downs (2007).

BLM Special Status Plant Species

Special status plants are sensitive species considered by the BLM to be rare in terms of global and/or state distribution. Each special status plant is ranked according to its range wide and state rarity based on the Natural Heritage Program (IDF&G Conservation Data Center) and assigned a 'type' number by the BLM. Special status plant species occur in a variety of plant communities and physical habitats, many of which have distinctive soil types, and several often occur together. The general habitat types that support special status plants are lake-bed sediments, sagebrush steppe, sandy soils, lithic soils, and wetland areas including playas and hot springs.

Table B-7 in Appendix B provides a list of all special status plants known to occur in the TMA, along with their current status and habitat requirements. Several endemic taxa are also found here, including Mulford's milkvetch (*Astragalus mulfordiae*) among others.

Noxious Weeds and Invasive Plants

"Noxious weed" is a legal designation made by the Idaho State Department of Agriculture about invasive nonnative plants 1) that are potentially more harmful than beneficial, 2) whose adverse impacts exceed the cost of control, and 3) that have the potential of being eradicated. Most of the TMA analysis area consists of agricultural land (20%) native plant communities (58%), and scattered noxious weed populations, consisting of approximately 14% of vegetative cover species (see Table B-8 in Appendix B).

Ten plant species identified by the State of Idaho as noxious weeds are known to occur within the TMA analysis area; Table B.8 provides a list of the noxious weeds known to occur, along with an estimation of their distribution within the TMA analysis area.

In addition to the State-listed noxious weeds, seven common invasive plant species occur in the TMA analysis area (Table B-9 in Appendix B). An example is exotic annual grasses, such as cheatgrass, that are common to dominate in many lower-elevation areas (especially the northern part of the TMA), often replacing native species, such as sagebrush. The following invasive species list is not exhaustive but addresses the most common invasive plant species that occur within the TMA analysis area.

Cheatgrass is an invasive, exotic, annual grass that is found throughout the TMA analysis area in the shrub understory, and can be the dominant species in some areas, especially in disturbed areas and adjacent to existing trails. Oftentimes, it can become established in an area after existing native vegetation is disturbed by fire or mechanical activities. Years with above-average precipitation result in increased cheatgrass production, particularly when concentrated in the late

winter and early to mid-spring. Cheatgrass is much more flammable than the native species it replaces when cured out. Russian thistle and tumble-mustard are invasive annual forbs that dominate in disturbed areas and areas with low precipitation. Locations of cheatgrass and other weeds have been documented during past treatment activities. The majority of treatments have occurred following wildfires. Treatment data show that many invasive species infestations tend to follow route corridors, as vehicles readily spread weed seed along the disturbed route corridors. Exotic annual communities vary greatly with soil type, former vegetation community composition, and history of disturbance.

3.2.2 Environmental Impacts

3.2.2.1 Impacts of Alternative A

Vegetation

The analysis area for direct and indirect impacts to vegetation consists of the footprint of the route network and the area between routes within the TMA.

Potential impacts to vegetation are specified in terms of the following impact indicators:

- Change in miles of routes within general vegetative cover types
- Route density within general vegetative cover types

Route density can be used as an indicator for direct and indirect impacts to vegetation and the landscape to which it contributes. In general, an area with more routes (expressed as higher route density) would have more degraded vegetation than an area with lower route density, if all other factors are equal. Impacts associated with a higher route density would be more detrimental in low elevation, salt desert scrub communities which are less tolerant of disturbance. This is due to finer soil textures (erodibility/K-factor) and lesser precipitation than higher elevation, coarser textured sites. See the Soils Environmental Impact Section 3.1.2 for more in depth discussion on erosion capability. Table B-10 in Appendix B describes miles and route densities of general vegetative cover types within the TMA.

Routes generally degrade native vegetation through vegetation removal and edge effects into adjacent habitat (Forman and Alexander 1998; Jones et al. 2008; Trombulak and Frissell 2008; Walker and Everett 1987). Impacts include erosion and sedimentation associated with routes, noxious weed/invasive species proliferation, habitat fragmentation, depressed vegetation vigor due to production and deposition of dust from route travel, and impacts from increased human presence, such as human-caused fires, illegal dumping, and other activities. These off-route impacts often extend several feet and potentially beyond on either side of a route. These impacts occur wherever there are existing routes, and can occur simultaneously with edge effects described below, depending on conditions.

Additionally, the impervious nature of compacted soils along routes and paved road surfaces can increase runoff and generate greater moisture availability immediately along routes (Ouren et al. 2007), creating edge effects in which conditions promote increased cover, vigor, and abundance of plant species compared to areas without routes. Networks of routes fragment intact native vegetation, and the resulting edge effects generate conditions that promote the encroachment of non-native and invasive plant species directly adjacent to trails (Lovich and Bainbridge 1999).

Bare ground created by routes increases the rate of evaporation of available moisture, increases the risk of wind and water erosion, and creates conditions favoring establishment of invasive plant species (see Noxious Weeds and Invasive Plants section below for more detailed discussion).

Other indirect effects include increased amounts of airborne pollutants and dust raised by motorized traffic. Airborne contaminants generated by engines can settle onto plants or soils and function as fertilizers (particularly carbon dioxide and nitrogen oxide), which has the potential to alter growth rates and community composition (Bazzaz and Garbutt 1988). Fugitive dust from motorized vehicle traffic adversely affects vegetation in the vicinity of routes. A blanket of dust on plant foliage inhibits plant growth rates through reduction of photosynthesis; reducing plant size and survival (Ouren et al. 2007). Weakened native vegetation provides an increased opportunity for exotic and invasive species to increase in cover and distribution, effectively out-competing native vegetation for soil nutrients and soil moisture.

Currently, the No Action Alternative would continue to have effects to vegetation, especially in the following communities which have an overall higher route density (Table B-10, Appendix B); big sagebrush (74 miles, 1.63 mi/mi^2), big sagebrush mix (57 miles, 1.71 mi/mi^2), exotic annuals (74 miles, 1.72 mi/mi^2), salt desert shrub (120 miles, 2.15 mi/mi^2), greasewood (22 miles, 2.27 mi/mi^2), seeding (28 miles, 2.35 mi/mi^2) and sparse vegetation/natural barren areas (28 miles, 1.64 mi/mi^2). Overall, route density across vegetative communities within the TMA is at 1.77 mi/mi^2.

Although they cumulatively represent less than seven percent of the TMA, the most sensitive vegetation types (salt desert scrub, greasewood, sparse vegetation/natural barren areas) have double/triple the route density of other vegetation categories. General impacts described above are more intense in these vegetation types due to fine soil textures and lack of moisture. See the Soils Affected Environment Section 3.1.1 for additional information.

Edge effects would continue to influence distribution and species composition of vegetation along all 446 miles of motorized routes across the TMA. Impacts could include more dust deposition, proliferation of noxious and invasive weeds, route widening, potentially exacerbate erosion and off- site sedimentation and general human presence impacts could be expected to occur to vegetation where there are existing routes.

Long term, populations of existing plants, native and invasive, would decrease as soil is exposed due to continued use of routes. Subsequently, the long-term effects of exposed soil along routes would result in ground moisture rates decreasing, accelerated erosion, and any viable seed reserves in the soil would be lost.

BLM Special Status Plant Species

Potential impacts to special status plant species are specified in terms of the following impact indicators:

- Number of motorized routes intersecting populations of special status plants
- Number of motorized routes and airstrips within 0.25 mile of populations of special status plants

The number of populations of known (recorded within the last 20 years) special-status plants within 0.25 mile of routes are reflected in Table B-11 in Appendix B. This table describes the

species and number of populations of special status species directly and indirectly impacted by motorized routes.

Currently, a total of 35 routes intersect populations of special status plants, with the same route occasionally intersecting multiple populations of the same and/or a number of populations of different species, totaling 62 identified route/population intersections across the TMA. The TMA contains approximately 61 populations within 0.25 mile of the route network, for a total of 85 routes occurring 359 times within 0.25 mile of these populations.

Under the No Action Alternative, special status plant species are expected to be impacted through dust deposition, the proliferation of noxious and invasive weeds, route widening, potentially exacerbate erosion and off-site sedimentation, and general human presence impacts are expected to occur to these plant communities where there are existing routes, particularly along routes that carry larger volumes of traffic. Germinating seeds and seedlings of both native vegetation and special status species are sensitive to motorized vehicle use of routes and can be killed by direct contact with tires or buried by soil erosion and impacted by compaction (CEQ 1979).

If existing trends in community population growth, recreational use and increasing numbers of public land visitors continue, it is likely that there would be additional affects to existing populations of special status species (particularly where motorized routes intersect populations), and increased severity of impacts to the existing affected area. Habitat fragmentation and degradation would continue in those areas where current routes are having adverse impacts on special status plants or suitable habitats. This would indirectly affect species' productivity, resiliency, diversity, and vigor and their capability to reproduce and sustain natural climatic fluctuations and ecological processes.

Noxious Weeds and Invasive Plants

Potential impacts to noxious weeds and invasive plant species are specified in terms of the following impact indicators:

- Number of motorized routes and airstrips intersecting or is proximate (i.e., within 300 feet) to populations of noxious weeds and invasive plants
- Change in miles of motorized routes and number of airstrips

Routes may be the first point of entry for noxious weeds and invasive plants into a landscape, and the route can serve as a corridor along which the plants are distributed farther into the landscape (Greenberg et al. 1997; Lonsdale and Lane 1994). A single OHV can disperse more than 2,000 invasive noxious knapweed seeds over a 10-mile radius, even when kept on a gravel road (Montana State University Extension Service 1992). In areas of disturbance, direct impacts to vegetation include reduced vegetative cover and reduced growth rates, which increase potential for non-native and pioneering species to become established (Ouren et al. 2007), and increased moisture availability along routes promotes increased vegetative cover of plants that can withstand recurring disturbance. Over the long term, as invasive and non-native species populations increase in size, they would continue to encroach into the native vegetation, out-competing native species, particularly after disturbance events (Adams et al. 1982). Networks of

routes fragment intact habitat and create edge habitats, which generate conditions that promote the encroachment of non-native and invasive plant species.

Currently all 448 miles of routes are open for public motorized use identified in the inventory, which allows for the continued dispersal of weed species throughout the planning area. Across the TMA, 217 routes were identified to intersect existing populations of noxious weeds and invasive plants. More than 596 populations of weeds occurring within 300 feet of these routes have been identified since 2001. Over the long term, as invasive and non-native species populations increase in size, they would continue to encroach into the native vegetation, out-competing native species. This would continue to have adverse impacts to wildlife habitats and biodiversity across the TMA, and these impacts would likely increase in relation to predicted increases in recreation and use of routes.

3.2.2.2 Impacts of Alternative B

Vegetation

The reduction in miles of motorized routes under Alternative B would reduce overall impacts to vegetation across the TMA, and the closure of 223 miles of routes would allow revegetation, reducing fragmentation of native plant communities and protecting soils from disturbance and erosion. Table B-12 in Appendix B describes changes in miles within general vegetative cover types and route densities from the No Action Alternative.

Under Alternative B, the vegetation communities with the highest route densities would be salt desert shrub (58 miles, 1.03 mi/mi^2), exotic annuals (40 miles, 0.94 mi/mi^2), and greasewood (11 miles, 1.15 mi/mi^2). This represents an overall reduction in miles of route within these communities by 46 to 52 percent across these vegetation types from Alternative A (Table B-12, Appendix B). The reduction in route density would increase areas of contiguous tracts of native vegetation and reduce erosion as closed routes revegetate thus stabilizing these areas and allowing plants to recolonize. Overall, route density across vegetative communities within the TMA under this alternative is 0.73 mi/mi^2.

Retained motorized routes would continue to affect native vegetation in the TMA. The road influence zone and edge effects would continue to influence the distribution and species composition of native vegetation along all 225 miles of motorized routes across the TMA. If existing trends in community population growth, recreational use and increasing numbers of public land visitors continue, it is likely that there would be additional vegetation affected, and increased severity of impacts to the existing affected area. Impacts in the form of increased dust deposition, noxious and invasive weed proliferation, and route widening potentially exacerbate erosion and off-site sedimentation, and general human presence impacts could be expected to occur to vegetation along the retained route network. Over the long term, populations of existing plants, native and invasive, would increase as the route surface and impacted areas of closed routes revegetate, reducing habitat fragmentation.

BLM Special Status Plant Species

Alternative B would result in the closure or non-motorized designation of 18 of the existing 35 routes (51%) that intersect 16 special status plant populations (26%). The closures would help to

protect the populations from disturbance and make suitable habitat more hospitable for some species without edaphic properties. The closure or non-motorized designation of 47 routes within 0.25 mile of 43 populations of special status plants would result in a reduction of 26% of populations of plants within 0.25 mile of motorized routes. The 25 plant populations that intersect motorized routes and 190 plant populations that occur within 0.25 mile of routes that would be retained for motorized use under this alternative would continue to affect populations of special status plant species within the TMA (see Table B-13 in Appendix B for a comparison of impacts by species).

This alternative would provide benefits to special status plant species by reducing impacts from the road influence zone (dust deposition, proliferation of noxious and invasive weeds, route widening, erosion and off-site sedimentation, soil compaction, crushing of plants, and general human presence, particularly along routes that carry larger volumes of traffic), and eventual natural revegetation of closed routes would reduce habitat fragmentation.

If existing trends in community population growth, recreational use and increasing numbers of public land visitors continue, it is likely that there would be increased road influence zone impacts to special status plant species and vegetation where motorized routes are retained. Habitat fragmentation and degradation would continue in those areas where current routes are having adverse impacts on special status plants or suitable habitats. This would indirectly affect species' productivity, resiliency, diversity, and vigor and their capability to reproduce and sustain natural fluctuations and ecological processes.

Noxious Weeds and Invasive Plants

Under Alternative B, closure of 223 miles of routes would provide a substantial reduction of opportunities for dispersal of weed species throughout the TMA. Additionally, 118 of 217 routes (54%) that currently intersect existing populations of noxious weeds and invasive plants would be designated as closed or non- motorized. Three hundred-three populations of noxious weeds or invasive plants occur within 300 feet of routes that would be designated as closed. The adverse impacts to native vegetation described in the No Action Alternative would be reduced commensurate with the miles of currently open routes that would be closed. The reduction in miles of motorized routes under this alternative would limit the spread of noxious weeds and invasive weeds where motorized vehicles are a method of dispersal, but impacts would still occur along retained motorized routes. The spread of noxious weeds would continue to have adverse impacts to wildlife habitats and biodiversity across the TMA, and these impacts would likely increase in relation to predicted increases in recreation and use of routes, though to a lesser degree than the No Action Alternative.

3.2.2.3 Impact of Alternative C

Vegetation

The reduction in miles of motorized routes under Alternative C would reduce overall impacts to vegetation across the TMA, and the closure of 163 miles of routes would allow revegetation, reducing fragmentation of native plant communities and protecting soils from disturbance and erosion. While growth of population and recreational use is expected to increase and potentially impact vegetation within the route influence zone along motorized routes, reducing the total miles available for motorized use would limit opportunities for the spread of noxious weeds and

invasive plants. Table B-14 in Appendix B describes the changes in route miles per general vegetative cover type from the No Action Alternative.

Under Alternative C, the vegetation communities with the highest route densities would be salt desert shrub (78 miles, 1.41 mi/mi^2), seedings (17 miles, 1.39 mi/mi^2) and greasewood (13 miles, 1.32 mi/mi^2). This represents an overall reduction in miles of route within these communities by 34 to 42 percent across these vegetation types from Alternative A (Table B-14, Appendix B). The reduction in route density would increase areas of contiguous tracts of native vegetation and reduce erosion as closed routes revegetate. Overall, route density across vegetative communities within the TMA would be 0.93 mi/mi^2.

Retained motorized routes would continue to have an adverse effect on the native vegetation in the TMA. The road influence zone and edge effects would continue to influence the distribution and species composition of native vegetation along all 285 miles of motorized routes across the TMA. If existing trends in community population growth, recreational use and increasing numbers of public land visitors continue, it is likely that there would be additional vegetation affected, and increased severity of impacts to the existing affected area. Increased road influence zone impacts in the form of more dust deposition, noxious and invasive weed proliferation, route widening, potentially exacerbate erosion and off-site sedimentation and general human presence impacts could be expected to occur to vegetation along the retained route network.

Over the long term, existing native and invasive plant populations would increase as the route surface and impacted areas of closed routes revegetate, reducing habitat fragmentation. Subsequently, the long-term effects of reduced erosion and sedimentation of streams would result in increased water quality.

Special Status Plant Species

Under Alternative C, 11 of the existing 35 routes (31%) that intersect 15 special status plant populations (24%) would be designated closed or non-motorized, and 33 of the 85 existing routes (39%) within 0.25 mile of 39 populations of special status plants (64%) would be designated closed or non-motorized. Twenty-four routes would continue to intersect 47 populations, and 52 routes that occur within 0.25 mile of 231 populations would be retained for motorized use (see Table B-15 in Appendix B for a comparison of impacts by species). Alternative C would have a moderate reduction of impacts to special status plant species in the TMA.

This alternative would provide benefits to special status plant species by reducing impacts from the road influence zone (dust deposition, proliferation of noxious and invasive weeds, route widening, erosion and off-site sedimentation, soil compaction, crushing of plants, and general human presence, particularly along routes that carry larger volumes of traffic), and eventual natural revegetation of closed routes would reduce habitat fragmentation.

If existing trends in community population growth, recreational use and increasing numbers of public land visitors continue, it is likely that there would be increased road influence zone impacts to special status plant species and vegetation where motorized routes are retained. Habitat fragmentation and degradation would continue in those areas where current routes are having adverse impacts on special status plants or suitable habitats. This would indirectly affect species' productivity, resiliency, diversity, and vigor and their capability to reproduce and sustain natural fluctuations and ecological processes.

Noxious Weeds and Invasive Plants

Under Alternative C, closure of 163 miles of routes would provide a moderate reduction of opportunities for dispersal of weed species throughout the TMA. Additionally, 83 of 217 routes (38%) that currently intersect existing populations of noxious weeds and invasive plants would be designated as closed or non- motorized. Two hundred thirty-five populations of noxious weeds or invasive plants occur within 300 feet of routes that would be designated as closed. The adverse impacts to native vegetation described in the No Action Alternative would be reduced commensurate with the mileage of currently open routes that would be closed. The moderate reduction in the miles of motorized routes under this alternative would limit the spread of noxious and invasive weeds where motorized vehicles are a method of dispersal, but impacts would still occur along retained motorized routes. These routes with noxious weeds would continue to have adverse impacts to wildlife habitats and biodiversity across the TMA, and these impacts would likely increase in relation to predicted increases in recreation and use of routes.

3.2.2.4 Impacts of Alternative D

Vegetation

The reduction in miles of motorized routes under Alternative D would reduce overall impacts to vegetation across the TMA, and the closure of 77 miles of routes would allow revegetation, reducing fragmentation of native plant communities and protecting soils from disturbance and erosion. While growth of population and recreational use is expected to increase in route influence zone impacts along retained motorized routes, reducing the total miles available for motorized use would limit opportunities for the spread of noxious weeds and invasive plants. Table B-16 in Appendix B describes the changes in route miles and densities compared to the No Action Alternative.

Under Alternative D, the vegetation communities with the highest route densities would be salt desert shrub (101 miles, 1.81 mi/mi^2), seedings (23 miles, 1.89 mi/mi^2) and greasewood (17 miles, 1.79 mi/mi^2). This represents an overall reduction in miles of route within these communities by 18 to 22 percent across these vegetation types from Alternative A (Table B-16, Appendix B) The reduction in route density would increase areas of contiguous tracts of native vegetation and reduce erosion as closed routes revegetate. Overall, route density across vegetative communities within the TMA would be reduced to 1.21 mi/mi^2 and would have moderate beneficial impacts to the current condition of vegetation across the TMA.

Retained motorized routes would continue to have an adverse effect on the native vegetation in the TMA. The road influence zone and edge effects would continue to influence the distribution and species composition of native vegetation along all 371 miles of motorized routes across the TMA. If existing trends in community population growth, recreational use and increasing numbers of public land visitors continue, it is likely that additional vegetation would be affected, and the severity of impacts would increase in affected areas. Increased road influence zone impacts in the form of more dust deposition, noxious and invasive weeds proliferation, route widening, potentially exacerbate erosion and off-site sedimentation and general human presence impacts could be expected to occur to vegetation along the retained route network.

Over the long term, existing native and invasive plant populations would increase as the route surface and impacted areas of closed routes revegetate, reducing habitat fragmentation.

Subsequently, the long-term effects of reduced erosion and stream sedimentation would result in increased water quality.

Special Status Plant Species

Under Alternative D, four of the existing 35 routes (11%) that intersect six special status plant populations (10%) would be designated closed or non-motorized, and 15 of the existing 85 routes (18%) within 0.25 mile of 22 populations of special status plants (36%) would be designated closed or non-motorized. Thirty-one routes would continue to intersect 65 populations and 70 routes that occur within 0.25 mile of 291 populations would be retained for motorized use (see Table B-17 in Appendix B for a comparison of impacts by species). Alternative D would have a slight reduction in impacts to special status plant species in the TMA.

This alternative would provide moderate benefits to special status plant species by reducing impacts from the road influence zone (dust deposition, proliferation of noxious and invasive weeds, route widening, erosion and off-site sedimentation, soil compaction, crushing of plants, and general human presence, particularly along routes that carry larger volumes of traffic), and eventual natural revegetation of closed routes would reduce habitat fragmentation.

If existing trends in community population growth, recreational use and increasing numbers of public land visitors continue, it is likely that there would be increased road influence zone impacts to special status plant species and vegetation where motorized routes are retained. Habitat fragmentation and degradation would continue in those areas where current routes are having adverse impacts on special status plants or suitable habitats. This would indirectly affect species' productivity, resiliency, diversity, and vigor and their capability to reproduce and sustain natural climatic fluctuations and ecological processes.

Noxious Weeds and Invasive Plants

Under Alternative D, closure of 77 miles of routes would provide a minor reduction of the opportunities for dispersal of weed species throughout the TMA. Additionally, 44 of 217 routes (20%) that currently intersect existing noxious weed and invasive plant populations would be designated as closed or non- motorized. One hundred twenty-four noxious weed or invasive plant populations occur within 300 feet of routes that would be designated as closed. The adverse impacts to native vegetation described in the No Action Alternative would be reduced commensurate with the miles of currently open routes. The moderate reduction of the miles of motorized routes under this alternative would limit the spread of noxious weeds and invasive plants where motorized vehicles are a method of dispersal, but impacts would still occur along retained motorized routes. These routes would continue to have adverse impacts to wildlife habitats and biodiversity across the TMA, and these impacts would likely increase in relation to predicted increases in recreation and use of routes.

3.3 Issue 3: Hydrology- How would the designated travel route network impact aquatic resources in the TMA?

3.3.1 Affected Environment

The TMA analysis area is within the Middle Snake-Boise hydrologic basin (Hydrologic Unit Code [HUC] 170501) (HUC 2). This TMA includes approximately 81 miles of named and unnamed perennial streams, 273 miles of named and unnamed intermittent streams and 3 miles of ephemeral streams. (Idaho Department of Environmental Quality [IDEQ] 2022; U.S. Geological Survey [USGS] 2017. Additionally, 260 perennial and intermittent water bodies- including 3 reservoirs, 122 perennial and 102 intermittent lake/ponds, and 33 swamp/marshes- as well as 9 springs, both developed and natural are present within the TMA (USGS 2017). Much of the area receives less than 12 inches of precipitation annually. Therefore, most stream flows result from snowmelt that produces peak discharges in the spring and recharges groundwater levels.

The general fluvial geomorphology of many of the streams along the front range of the Owyhee Mountains is low-sinuosity, high-gradient, V-shaped channels. When the streams flow into the lower- gradient plains, they typically increase in sinuosity (though in some areas access to the lower plains has been lost, and these channels have straightened) and become chisel-shaped channels. Under deteriorating conditions, width to depth ratios increase, eroded banks become evident, and streams can become severely entrenched. In some cases, natural stream channels are developing within the entrenched channels.

Surface water quality varies throughout the TMA, and is dependent on geology, soils, and uses, riparian and wetland vegetation, and water discharge. Section 303(d) of the Clean Water Act establishes requirements for States to identify and prioritize water bodies that do not meet water quality standards and develop a water quality improvement plan, called a total maximum daily load (TMDL), for each water body not meeting water quality standards. These water bodies are placed into Category 4, and those in the 4a Category have had a TMDL completed and approved by the U.S. Environmental Protection Agency. Water bodies in Category 5 are those that do not meet water quality standards for one or more beneficial uses due to one or more pollutants. Streams and water bodies can be placed on both lists. Overall, there are approximately 133 miles of Category 4a and 71 miles of Category 5 streams in the TMA (see Table B-18 in Appendix B for a detailed description of these listed streams). Streams within the TMA are on the Category 4a list for temperature (5 miles), sedimentation (13 miles), dissolved oxygen (8 miles), total suspended solids (3 miles) and/or phosphorus (103 miles), and/or on the Category 5 (303[d]-listed) list for temperature (63 miles) and sedimentation (7 miles) (IDEQ 2022).

Motorized routes have the potential to increase input of sedimentation, turbidity, and pollutants within affected watersheds, reducing stream habitat and adversely affecting water quality and subsequently, riparian and aquatic habitats. Acceleration of surface-water runoff and soil erosion can be caused by compaction of soils, disruption of soil crusts, and reduced vegetation cover. Sediment and other debris that erode from the surfaces of the routes could be flushed into aquatic systems, resulting in increased stream water turbidity. Pollutants associated with deposition of emissions and spills of petroleum products could be absorbed into soils and sediments or

dissolved in runoff. Surface water runoff and erosion of contaminated soils could introduce potentially toxic chemicals into aquatic systems. Routes also provide human access, and the activities that accompany this access can magnify the adverse effects on aquatic systems beyond those solely from routes themselves.

Presence of routes is correlated with changes in the hydrologic and geomorphic processes that shape aquatic systems and riparian habitat (Gucinski et al. 2001). These changes include severing connections between streams and adjacent floodplain networks, the conversion of subsurface to surface flow by intercepting groundwater flowpaths, and finally, routes can divert flow to streams, which can increase runoff, the likelihood of flash floods and erosion (Forman 2004; Gucinski et al. 2001). Routes in proximity to watercourses tend to increase overland flow sediment transport capacity (Hinckley et al.1983) by causing changes to the surface that alter patterns of runoff. Vehicle tracks and roads in riparian areas smooth obstructions to overland flow, which in turn increases flow rates, leading to accelerated erosion and increased creation of continuous rills and channels. These rills and gullies can grow into continuous gullies (Heede 1983) over time, which can directly transport sediment and pollutants into waterways. This primary impact would result in continued increases of suspended sediment loads from stream crossings, which occur at higher levels along routes that carry larger volumes of traffic, and soil erosion and its delivery to streams from roads and routes, particularly during precipitation events (Brown 1994). Additionally, contaminants contained in soils from exhaust or spills can be transported into aquatic systems by precipitation events or wind-based erosion (Forman et al. 2003).

3.3.2 Environmental Impacts

3.3.2.1 Impacts of Alternative A

The analysis area for direct impacts to hydrological resources consists of the footprint of the current route network, and for indirect impacts, route mileages within 300 feet of perennial or intermittent (which includes ephemeral) streams.

Potential impacts to hydrology are specified in terms of the following impact indicators:

- Number of route crossings of perennial and intermittent waterways
- Number of route crossings of Category 4a and 5-listed waterways
- Change in miles of routes within riparian habitat (300 feet of perennial and intermittent streams, waterbodies and springs)
- Change in miles of routes within riparian habitat of Category 4a and 5-listed waterways (300 feet)
- Route density in riparian areas (defined as 300ft on either side of a perennial or intermittent streams, waterbodies and springs)

The Interior Columbia Basin Ecosystem Management Project (ICBEMP) used road density as one of 11 variables to model the status of aquatic and terrestrial systems at a landscape scale (Quigley et al. 1996). ICBEMP consistently found roads to be associated with degraded systems using a road density class to classify degradation as low (<0.1-0.7 mi/mi^2), moderate (0.7-1.7 mi/mi^2), and high (1.7-4.7 mi/mi^2). Route density is used in this analysis as a metric for comparing potential impacts of routes between alternatives.

Currently there are 264 crossings of perennial and intermittent streams by 134 motorized routes. Two perennial stream crossings occur in Category 4a and 5-listed streams (see Table B-19 in Appendix B for crossings detailed by listed stream). A total of 142 miles of motorized routes occur within 300 feet of perennial and intermittent streams, water bodies, and springs at a density of 3.25 mi/mi^2. Of these routes, approximately 32 miles occur within 300 feet of Category 4a and 5-listed streams.

Under Alternative A impacts to hydrological resources is expected, especially in areas where concentration of routes is high. Existing routes would continue to contribute to an increase of drainage densities of small watersheds, increasing runoff and stream flow during high-flow events, and consequently increased erosion and introduction of more sediment into the stream system (Furniss et al. 2000). Increases in fine sediment impair the growth and survival of aquatic life, including aquatic insects and fish. The overall result of increased sedimentation into stream systems would result in continued failure to meet IDEQ water quality standards for Category 4a and 5-listed streams and potential impairment of new streams, in addition to impacts to riparian and aquatic habitats.

3.3.2.2 Impacts of Alternative B

Alternative B would have the greatest beneficial impact to live water and stream habitats of the alternatives. Of the existing 264 crossings of existing perennial and intermittent streams, 155 would be located on routes that would be designated as closed or non-motorized under Alternative B. Two perennial stream crossings in Category 4a and 5-listed streams would be retained in the route network as either open to public motorized use or authorized use only are described in Table B-20 in Appendix B.

There are 76 miles of routes that lie within 300 feet of perennial and intermittent streams, waterbodies, and springs that would be closed or designated as non-motorized; approximately 20 miles of these routes lie within 300 feet of Category 4a and 5-listed streams. Closure of the 76 miles of routes within 300 feet of streams would result in a total of 67miles of retained motorized routes occurring within 300 feet of streams at a density of 1.52 mi/mi^2. This would reduce the route density when compared to the current situation, placing density in the upper spectrum of the moderate category. Alternative B provides the most benefits to hydrologic function and riparian habitats in response to a reduction in total route density.

This alternative would close 223 miles of routes and reduce current rates of sedimentation and turbidity levels in streams directly affected by crossings. The closures would reduce the number of stream crossings from the current condition by 59%, and commensurately reducing existing impacts to watershed conditions and improving hydrological function across the TMA. The closure of a substantial number of stream crossings would reduce the impacts from sedimentation, turbidity and pollutants entering the system, particularly along routes that carry larger volumes of traffic. Overall, the closure of stream crossings would have direct benefits to water quality and aquatic habitats across the TMA.

There would be a direct benefit to riparian and aquatic habitats and a reduction in the potential for erosion-caused sedimentation and contamination by pollutants from runoff with the closure or non- motorized designation of 54% of routes within 300 feet of all streams across the TMA. The 20 miles of routes within 300 feet of Category 4a and 5-listed streams (equaling 62% of existing mileage) would be closed or designated as non-motorized, indirectly improving water quality by reducing soil compaction and allowing for natural revegetation. The reduction of

motorized routes would commensurately decrease the amount of erosion and surface water runoff produced on route surfaces and decrease the potential for migration of sediments and contaminates into aquatic habitats, as well as decreasing the opportunities for expansion of surface disturbance caused by human access.

3.3.2.3 Impact of Alternative C

Alternative C would reduce impacts to water quality associated with current conditions. Of the existing 264 crossings of existing perennial and intermittent streams, 125 would be located on routes that would be designated as closed or non-motorized under Alternative C. One of the perennial stream crossings that would be designated as closed or non-motorized occur in Category 4a and 5-listed streams, and one crossing would be retained. Crossings retained in the route network as either open to public motorized use or authorized use only are described in Table B-21 in Appendix B. Additionally, there are 66 miles of routes that lie within 300 feet of perennial and intermittent streams that would be closed or designated as non-motorized; approximately 19 miles of these routes lie within 300 feet of Category 4a and 5-listed streams.

Closing of 66 miles of routes would result in a total of 76 miles of retained motorized routes occurring within 300 feet of streams at a density of 1.74 mi/mi^2. This would reduce the route density when compared to the current situation, although density would still be within the high category. A reduction in route density would moderately benefit hydrologic function and riparian and aquatic habitats in response to a reduction in total route density.

This alternative would reduce current rates of sedimentation and turbidity levels in streams directly affected by crossings, particularly along routes that carry larger volumes of traffic. The closure of 163 miles of routes across the TMA is reflected in a reduction in number of stream crossings from the current conditions by 47%, commensurately reducing the existing impacts to watershed and hydrological function across the TMA. More specifically, the closure of 50% of existing crossings in Category 4a and 5-listed streams would improve water quality in already impaired waterbodies. Overall, the closure of stream crossings would have moderate direct benefits to water quality and aquatic habitats across the TMA.

There would be a direct benefit to riparian and aquatic habitats and a reduction in the potential for erosion-caused sedimentation and contamination by pollutants from runoff with the closure or non- motorized designation of 46% of routes within 300 feet of all streams across the TMA. Sixty percent of routes within 300 feet of Category 4a and 5-listed stream would be closed or designated as non-motorized, indirectly improving water quality by reducing soil compaction and allowing for natural revegetation. Overall, the reduction of a moderate percentage of motorized routes would commensurately decrease the amount of erosion and surface water runoff produced on route surfaces and thus lessen the potential for sedimentation and contamination produced by vehicle travel from entering streams and aquatic habitats, as well as decreasing the opportunities for expansion of surface disturbance caused by human access.

3.3.2.4 Impacts of Alternative D

Of the existing 264 crossings of existing perennial and intermittent streams, 56 would be located on routes that would be designated as closed or non-motorized under Alternative B. Two perennial stream crossings in Category 4a and 5-listed streams would be retained in the route network as either open to public motorized use or authorized use only. Crossings retained in the route network as either open to public motorized use or authorized use only are described in

Table B-22. There are 29 miles of routes that lie within 300 feet of perennial and intermittent streams that would be closed or designated as non-motorized; approximately 9 miles of these routes lie within Category 4a and 5-listed streams.

Closure of the 29 miles of routes would result in a total of 113 miles of retained motorized routes occurring within 300 feet of streams at a density of 2.59 mi/mi^2. This would reduce the route density when compared to the current situation, although density would still be within the high category, and over three times what (Lee et al. 1997) determined as being generally associated with low degradation. Alternative D would provide minor benefits to hydrologic function and riparian and aquatic habitats compared to Alternative A in response to a reduction in total route density.

This alternative would reduce current rates of sedimentation and turbidity levels in streams directly affected by crossings, particularly along routes that carry larger volumes of traffic. The closure of 77 miles of routes across the TMA is reflected in a 21% reduction in number of stream crossings from the current conditions, commensurately reducing the existing impacts to watershed and hydrological function across the TMA. Overall, the closure of stream crossings (including Category 4a and 5-listed and non-listed streams) would have minor direct benefits to water quality and aquatic habitats across the TMA.

Alternative D would directly benefit riparian and aquatic habitats and reduce the potential for erosion- caused sedimentation and contamination by pollutants from runoff with the closure or non-motorized designation of 20% of routes within 300 feet of all streams across the TMA. Twenty-seven percent of routes within 300 feet of Category 4a and 5-listed streams would be closed or designated as non-motorized, indirectly improving water quality by reducing soil compaction and allowing for natural revegetation. Overall, the reduction of a minor percentage of motorized route length would commensurately decrease the amount of erosion and surface water runoff produced on route surfaces and thus lessen the potential for sedimentation and contamination produced by vehicle travel from entering streams and aquatic habitats.

3.4 Issue 4: Wildlife- How would the designated travel route network impact wildlife (e.g., special status species, migratory birds, big game, pollinators, threatened and endangered species) in the TMA?

3.4.1 Affected Environment

The TMA is located entirely in the Owyhee Uplands as delineated by the Idaho department of Fish and Game and supports habitat for wildlife species representative of semi-desert shrublands of SW Idaho (IDFG 2017). The dominant habitat types or vegetative communities in the TMA are big sagebrush, mixed shrublands, salt desert scrub, and mixed exotic annuals (Table B-10). Exotic annual communities in the TMA are primarily comprised of cheatgrass, Russian thistle, and tumble mustard and these communities are now common in areas where disturbances (e.g. wildfires, historic livestock grazing) have converted perennial shrublands to annual plant communities. Riparian areas located within the TMA analysis area include the Snake River, Rabbit Creek, Succor Creek, Fossil Creek, CJ Strike Reservoir, Crane Falls, and the Bruneau Duck Ponds. Privately owned agricultural lands are also present throughout the TMA and located adjacent to public lands and provide additional habitat for many wildlife species in the TMA. Species common across all habitat types include American badger, coyote, pronghorn antelope,

black-tailed jackrabbit, cotton-tailed rabbit, Piute ground squirrel, kangaroo rat, gopher snake, western rattlesnake, side-blotched lizard, sagebrush lizard, western toad, Brewer's sparrow, horned lark, common raven, a suite of bat species, and various invertebrates including pollinator species (BLM 2008c).

The TMA is located within the NCA which supports habitat for one of the world's largest concentrations of breeding of birds of prey; raptor species in the TMA are discussed in detail in the Birds of Prey section of the Affected Environment.

Fisheries

Perennial and intermittent streams within the TMA provide habitat for a variety fish species (see Hydrology Section 3.3.1 for existing surface water conditions within the TMA). During years of greater water availability, fishes are distributed to lower elevations in streams (Zoellick 1999). Extended periods of drought reduce fish distribution and population sizes (Dunham et al. 1997). Key indicators of aquatic habitat condition of sagebrush desert streams include stream shading for temperature control, adequate vegetative cover for habitat and controlling bank erosion, and appropriate substrate.

Species present within the TMA include one special status fish species, redband trout (*Oncorhynchus mykiss gairdneri*). Redband trout is a BLM special status species and is also listed as a species of special concern by the State of Idaho and the American Fisheries Society. This species' abundance, distribution, and genetic diversity have been in decline across much of its range due to a variety of factors (Behnke 1992). Long term, redband trout are threatened by the loss of migratory forms of the species and connectivity with other populations (Rieman and McIntyre 1995). Stream shade is a strong predictor of redband trout abundance in southwestern Idaho streams (Zoellick and Cade 2006). Within the TMA analysis area, redband trout are widely distributed and have been documented along approximately 38 miles of rivers and streams, including the Snake River, Sinker Creek, Little Valley Creek, Castle Creek and the Bruneau River. Currently, redband trout are only verified in Sinker Creek.

BLM Special Status Species

BLM Special Status Species are those species listed or proposed for listing under the Endangered Species Act (Type 1), or candidate species, and species designated by the Idaho BLM State Director and the state of Idaho as Bureau sensitive species (Type2) (6840 Manual, BLM 2008b). Table B-23 in Appendix B contains a list of BLM Type 1 and Type 2 Special Status Species that occur or potentially occur within the NCA boundary, and their potential to occur within the TMA analysis area (USDI 2022). Several Type 2 raptor species including golden eagle, ferruginous hawk, and burrowing owl will be discussed in detail in the birds of prey or migratory bird section. Impacts to other BLM Type 2 species will be inferred from the general wildlife and migratory bird analyses.

Pollinators: BLM manages for pollinators such as bees, butterflies, bats, and moths under the Strategic Plan for Pollinator Conservation (BLM 2022) and the Special Status Species Management Manual (BLM 2008b). Pollinators are crucial for the proliferation of flowering plant species which are the cornerstone for sagebrush obligate wildlife, as well as big game (Gilgert and Vaugh 2011). Potential habitat for upland associated Type 2 pollinator species occur in the TMA analysis area including Bruneau dunes tiger beetle, and monarch butterfly (Candidate ESA species), Suckley's cuckoo bumble bee, and western bumble bee. Pollinators

occur across all habitats/vegetation types; impacts to vegetation inherently impacts pollinators through reduction/increase/quality of floral resources for food and nesting habitat. For analysis purposes, reference Section 3.2 - Vegetation.

Birds of Prey

The TMA analysis area is located within the Morley Nelson Snake River Birds of Prey National Conservation Area (NCA), which supports one of the world's densest concentrations of breeding raptors. In a given year, over 700 raptors representing 17 species have been documented occupying the area to nest and raise young. The NCA also supports important winter habitat and migration stop over habitat for eight additional raptor species. Numerous raptor species occur or potentially occur within the TMA analysis area during varying times of the year including prairie falcon, peregrine falcon, American kestrel, merlin, golden eagle, bald eagle, ferruginous hawk, northern goshawk, Cooper's hawk, Sharp-shinned hawk, northern harrier, osprey, red-tailed hawk, Swainson's hawk, rough-legged hawk, burrowing owl, great horned owl, long-eared owl, short-eared owl, western screech owl, and northern saw-whet owl. Key prey species for diurnal raptors in the TMA analysis area are Piute ground squirrel, black-tailed jackrabbit, and cottontail rabbit. Other small mammals, including deer mice, vole, and kangaroo rat, are eaten mainly by nocturnal owls, but also by several diurnal raptors. Yellow-bellied marmot, woodrat, pocket gopher, vagrant shrew, and least chipmunks, are also found in the TMA, and all are taken as prey by raptors. A wide variety of small and medium-sized birds, including waterfowl, are preyed upon by raptor species as well. Golden eagle, prairie falcon, and ferruginous hawk were identified for species-specific analysis in this document due to the availability of data. Impacts to other raptor species and prey species habitat will be inferred from the birds of prey species-specific analysis, and the general wildlife and migratory bird analyses.

Golden Eagle

Golden eagles are a resident and migratory raptor species that breeds in the NCA beginning in mid-to-late January. In the NCA, golden eagles typically nest along the cliffs of the steep canyon walls of the Snake River. A territory may contain up to 18 nests, which a breeding pair or individual maintains and decorates as part of their annual courtship (Kochert and Steenhof 2012). A typical golden eagle raises an average of only 1 young per year and up to 15 young over its lifetime, and the number of young produced each year depends on a combination of weather conditions and prey availability (Katzner et al 2020). Black-tailed jackrabbit are a sagebrush obligate species and is the preferred prey species for golden eagles in the NCA, and golden eagle reproductive productivity fluctuates with the prey species availability (Kochert et al 2002). In the NCA, golden eagles also prey on Piute ground squirrels, rock pigeons, American coots, mallards, and marmots, especially in areas that have loss shrub habitat due to wildfire; higher proportions of rock pigeons in nestling eagle diets were negatively associated with nestling survival (Heath et al 2021). Forty historical nesting territories occur throughout the NCA in and near the Snake River Canyon and 22 of the territories occur in the TMA analysis area. This includes territories that have been vacant for many years and territories that are regularly occupied by golden eagles during the breeding season.

Golden eagles are protected under the Bald and Golden Eagle Protection Act, as amended in 1990. BLM manages golden eagles under Executive Order 13186 Sec. 3, which directs federal agencies to promote the conservation of migratory bird populations.

Prairie Falcon

Prairie falcons are a migratory raptor species that breeds in the NCA, occupying the area from late January through July. They typically nest on cliffs, outcroppings, or pinnacles in cavities, ledges, or the nests of other raptors and ravens. Prairie falcons in the NCA time their annual breeding cycle with the seasonal activity of Piute ground squirrels, which are a critical food resource for breeding prairie falcons (USDI 1996). Prairie falcons return to the NCA in January as Piute ground squirrels begin to emerge from burrows after a six-month period of inactivity. Prairie falcons begin establishing nesting territories in late February through March, and peak egg laying corresponds with the emergence of juvenile ground squirrels, which increase the abundance of prey availability for falcons. Prairie falcons migrate from the NCA in late June or early July as summer heat and the desiccation of plant food sources prompt ground squirrels to descend into burrows to begin a period of seasonal inactivity (USDI 1979). A relatively small population of prairie falcon occupy the NCA during winter months. Prairie falcons are not considered a BLM Special Status Species, however, the NCA's Resource Management Plan directs the BLM to place special management emphasis on the species.

The NCA supports the largest breeding population of prairie falcons across the species range (which covers most of the Western U.S. and extends into Canada and Mexico) and past estimates suggest the NCA supports habitat for 5% of the entire breeding population; in a highly productive year, more than 200 breeding pairs nest in the NCA (USDI 1979; Steenhof 2020). Prairie falcon surveys conducted in 2021 documented 256 occupied breeding territories in the NCA (Alsup et el. 2021, *unpublished data*); 101 of these territories occur in the TMA analysis area.

Ferruginous Hawk

The NCA supports breeding habitat for a relatively large population of ferruginous hawks, which are a migratory species that migrate to the NCA in late February to begin courtship and breeding, and typically migrate from the NCA by late July after young have fledged. Ferruginous hawks prefer flat and rolling terrain in grasslands and open shrub steppe habitats, and nest in trees and shrubs, on cliffs, pinnacles, rock outcrops, buttes, banks, slopes, and utility structures (Ng et al. 2020). A network of artificial nesting platforms exists in the NCA, which provides supplemental nesting habitat for the species. Ferruginous hawks feed heavily on small mammals, primarily Piute ground squirrels and rabbits, but also consume birds and reptiles, and insects (Olendorff 1993). In Southwest Idaho and the NCA, agricultural areas provide important foraging areas during the breeding season, as irrigated croplands likely provide a supplemental mammalian food source (Isted et al 2023). Ferruginous hawk populations have likely increased in the NCA as past wildfires have converted shrub communities into desirable open grassland communities (BLM 2008c).

For the purposes of this environmental analysis, ferruginous hawk nesting territory data available from the Idaho Fish and Wildlife Information System (IFWIS) database were used as there is a

lack of recent monitoring data for the TMA analysis area. These historical nesting territories available in IFWIS were generally surveyed by the BLM or the National Biological Survey between the late 1970s and the mid-1990s; these are the best available data and will represent potential ferruginous hawk nesting habitat. Incidental observations in IFWIS and telemetry data also document occurrences of ferruginous hawks across the TMA analysis area. Eighteen historical ferruginous hawk nesting territories occur across the TMA Analysis area (IFWIS 2023).

Migratory Birds

The TMA provides habitat for a diverse assemblage of migratory bird species. Dominant habitat types in the TMA include big sagebrush and mixed shrubland (50,521 acres), salt desert shrub (41,749 acres), and exotic annuals (27,540 acres) (Table B-6). A mosaic of private agricultural lands occur throughout the TMA (40,163 acres), and are located immediately adjacent to habitat on public lands; dependent on the use, these agricultural lands provide additional habitat for various migratory birds (e.g. foraging areas and stopover habitat).

Common species of sagebrush and salt desert shrub communities include sage thrasher, Brewer's sparrow, loggerhead shrike, sagebrush sparrow, and lark sparrow (Intermountain Bird Observatory 2023, *unpublished data*). Common species found in open shrub and annual grass and herbaceous communities are burrowing owl, long-billed curlew, common nighthawk, western meadowlark, and horned lark. Sage thrasher, loggerhead shrike, sagebrush sparrow, burrowing owl, and long-billed curlew are BLM Type 2 Sensitive species (Table B-23).

Riparian habitats in the TMA are diverse and range from the riverine system of the Snake River Canyon to manmade reservoirs at Crane Falls and the Bruneau Duck Ponds. These areas provide breeding, migration stop over, and wintering habitat for a suite of migratory species including include yellow warbler, yellow-rumped warbler, Bullock's oriole, western kingfisher, flycatcher species, marsh wren, white-crowned sparrow, song sparrow, black-billed magpie, western screech owl, saw whet owl, great-horned owl, and long-eared owl.

Big Game

Pronghorn Antelope: A large portion of the TMA analysis area is classified as pronghorn antelope general summer and winter habitat as defined and delineated by the Idaho Department of Fish and Game. The TMA analysis area does not support any documented migration corridors for the species. Pronghorn antelope are generally found in shrub steppe and grassland habitats, and of particular importance to the species is the presence of succulent forbs, an essential component of the vegetative community for lactating does. For winter survival, high- quality browse that protrudes above the snow level is crucial (Yoakum 2004). Elk and mule deer were not analyzed in detail in this EA as the NCA is generally not an important wintering or fawning area for either species, however mule deer have been observed in areas of the Snake River Canyon and elk that typically occupy habitats in the Owyhee uplands may occasionally occupy the TMA during the winter. Impacts to elk and mule deer species can be inferred from the pronghorn analysis.

3.4.2 Environmental Impacts

3.4.2.1 Impacts of Alternative A

Given the complexity and the number of wildlife species analyzed, reference the summary Table B-24 in Appendix B for Alternative A. The analysis area for direct and indirect impacts to general wildlife consists of the footprint of the route network and area between routes within the TMA. Potential impacts to wildlife are specified in terms of the following impact indicators:

- Change in miles of motorized routes
- Density of motorized routes within habitat

Effects of routes on wildlife occur in three ways: direct effects, such as habitat loss and fragmentation; routes use effects, such as traffic causing avoidance or mortality from roadkill; and additional facilitation effects, such as increased recreational pressures, which can increase with road access (discussed in more detail in Big Game below). Road density is a useful index of the effect of roads on wildlife populations (Forman et al. 1997). Route density can be used as an indicator of habitat fragmentation and degradation, as well as potential for disturbance. The effects of route density on wildlife vary by species; however, areas with route density greater than 2.0 mi/mi^2 exceed thresholds for many terrestrial wildlife species (Trombulak and Frissell 2000; Wisdom et al. 2004) and 1.0 mi/mi^2 has been determined to be the maximum threshold for a naturally functioning landscape containing sustained populations of large mammals (Forman and Hersperger 1996).

Routes fragment habitats by changing landscape structure and by directly and indirectly impacting species. Habitat effects of roads on the landscape include dissecting vegetation patches, increasing the edge-affected area and decreasing interior area, and increasing the uniformity of patch characteristics, such as shape and size (Reed et al. 1996). Weed invasions are commonly associated with routes and could alter habitat composition, structure, and function. Routes, ranging from highways to single-track trails, have been identified as significant barriers to animal movement and contribute heavily to habitat fragmentation (Meffe and Carol 1997), reduced population numbers, interruption of life-history events, and cause disturbance from both noise and presence. Road-avoidance behavior is characteristic of large mammals such as elk, bighorn sheep, and bear. Avoidance distances of 328 to 656 feet are common for these species (Lyon 1985). Populations can be fragmented into smaller subpopulations causing increased demographic fluctuation, inbreeding, loss of genetic variability, and local population extinctions of less vagile species, such as small mammals or reptiles.

Adverse effects of motorized recreation on wildlife are numerous and well documented. There is little documentation of direct mortality to wildlife from motorized recreation, although physical impairment and stress does occur from hearing loss caused by high-decibel engine noise, escape responses, reduced reproductive output, and disruptions to foraging and estivation activities (Berry 1980). Routes pose a direct mortality hazard to small, slowly moving, migratory animals, such as reptiles, making them highly vulnerable as they cross even narrow routes (Langton 1989).

Alternative A would have an adverse effect on wildlife species, including raptor prey species, across the TMA, causing disturbance and habitat fragmentation, as all 446 miles of currently inventoried routes are open to motorized travel. Current route density of 1.77 mi/mi^{2T}, above the 1.0 mi/mi^2 maximum threshold for a naturally functioning landscape containing sustained populations of large mammals, but still below that of the 2.0 mi/mi^2 threshold for many individual species. Mode, spatial, temporal, and social variables all determine the degree of impact motorized routes have on a specific species. Impacts on a species could include energetic costs, behavioral changes (feeding, breeding, sheltering), loss of fitness (survival, growth, reproduction rates), site avoidance, and others. Wildlife species including raptor prey species, would continue to experience the adverse effects of motorized recreation throughout the TMA, and some species, such as small mammals, migratory birds, and reptiles, could show population declines over time as levels of use increase.

Fisheries

The analysis area for fisheries consists of the footprint of the route network. Potential impacts to fisheries are specified in terms of the following impact indicators:

- Number of stream crossings in redband trout habitat
- Change in miles of motorized routes within 300 feet of redband trout habitat
- Number of stream crossings in of perennial and intermittent streams
- Change in miles of motorized routes and number of airstrips within 300 feet of perennial and intermittent streams

Impacts of routes on aquatic habitats include barriers to migration, water temperature changes, and alterations to streamflow regimes. Road stream-crossings have been shown to have effects on stream invertebrates, as increased fine sediment in stream gravel reduces populations of benthic organisms by reducing habitat and algal production, which are the primary food source of many invertebrates (Chutter 1969; Hynes 1970). Total species richness of aquatic insect larvae can be negatively related to the number of stream crossings (Newbold et al. 1980), and diversity is negatively correlated with increased road density (McGurk and Fong 1995). Additionally, pools function as resting habitats for migrating adult fish, rearing habitats for juveniles (Bjornn and Reiser 1991), and refugia from natural disturbances (Sedell et al. 1990). Pools that lose volume from sediment (Jackson and Beschta 1984; Lisle 1982) support fewer fish (Bjornn et al. 1977; Jackson and Beschta 1984; Lisle 1982), and fish that reside in them may suffer higher mortality (Alexander and Hansen 1986).

Routes adjacent to stream channels can contribute additional effects. Changes in temperature and light regime from decreases in the riparian canopy can have adverse effects on fish populations. Adverse effects may include elevation of stream temperatures beyond the range of preferred rearing, inhibition of upstream migrations, increased disease susceptibility, reduced metabolic efficiency, and shifts in species assemblages (Beschta et al. 1987; Hicks et al. 1991). Increasing road densities are associated with decreased likelihood of spawning and rearing of non-anadromous salmonids in the upper Columbia River basin, and populations are negatively correlated with road density (Lee et al. 1997).

Currently, 2 miles of open routes and 2 miles of limited routes lie within 300 feet of redband trout habitat within the TMA, with no crossings. Under this alternative, redband trout habitat would continue to be impacted by existing stream crossings, which can impede movement of fish, gene flow, and change invertebrate assemblages. Routes adjacent to or crossing these streams would continue to contribute sediment and contaminants into waterways and increase turbidity, influence water temperature through removal of vegetation, and cause changes to the structure of in-stream habitats such as pools.

Birds of Prey

The analysis area for direct impacts to birds of prey includes the motorized route network within species nesting territory buffers, and the analysis area for indirect impacts consists of the TMA. A 0.5-mile buffer was used for golden eagles, prairie falcons, and ferruginous hawks. Potential impacts to birds of prey are specified in terms of the following impact indicators:

- Reduction in miles of motorized routes within nesting territory buffers
- Density of motorized routes within nest buffers (as a comparison metric between species)

Birds of prey are sensitive to harassment or human presence, which are often facilitated by road access; potential reductions in productivity, increases in energy expenditures, or displacements in population distribution or habitat use can occur (Bennett 1991; Mader 1984), particularly if disturbed during breeding or nesting. Many raptor species are sensitive to human disturbance during breeding, and chronic disturbance can have population-level impacts (Spaul and Heath 2016, Pauli et al. 2016). Many species are particularly sensitive to disturbance during the pre-egg laying stage, and disturbance during this time can result in failed or reduced nesting attempts. Disturbance during incubation or nestling care stages that cause the adult to flush (leave the nest) can result in failure to hatch, high nestling mortality from exposure, or early fledging of nestlings. Flushing responses of adult raptors can vary based on type and duration of disturbances, stage of the nesting cycle, and by species.

Outdoor recreation, whether on foot or by off-road vehicle can influence the nesting biology of eagles adversely. Several studies conducted in portions of the NCA and the neighboring Owyhee Field Office, documented that golden eagle occupancy and success of territories near recreational trails and parking areas declined from 1999 to 2009 after a dramatic increase in OHV use (Steenhof et al 2014; Katzner et al 2020), and occupancy and success of territories not impacted by OHVs did not change. In that same study area, a 2-year follow-up study indicated that OHV use was associated with a reduction in the probability of both territory occupancy and nest survival (Spaul and Heath 2016; Katzner et al 2020). In addition, early season pedestrian use and other nonmotorized use reduced the probability of egg-laying, and pedestrians, who often arrived near eagle nests via motorized vehicles, were associated with a reduction in time that eagles spent at the nest (Spaul and Heath 2016; Katzner et al 2020).

Ferruginous hawks are also sensitive to human disturbance during the nesting season and may even abandon a nest during the pre-egg laying period and incubation period due to a single disturbance (Clark et al. 1989). Additionally, probability of flushing from nests varied with type of approach by researchers, the number of previous visits, and the amount of vehicular traffic around the nest. Ferruginous Hawks were more likely to be disturbed if approached on foot

compared to in a vehicle and if the nest was located in an area with typically low disturbance (Nordell et al. 2017). Ferruginous hawks nesting in portions of the NCA may tolerate some human disturbance during the nesting season as commonly occupied artificial nesting platforms and energy infrastructure nests are located along heavily used roads in the NCA, and these occupied territories typically produce young. Ferruginous hawks that occupy nesting territories in portions of the TMA analysis area may be more susceptible to human disturbance as they occur in relatively less accessible areas of the NCA.

Prairie falcons may tolerate greater levels of human disturbance. Previous studies in the NCA suggested that construction and recreation activities had no detectable adverse effects on nearby nesting prairie falcons (Holthuijzen 1989). Behavior and productivity were unaffected by blasting and operation of heavy equipment ≥50 m below and at distances 550-1,000 m from nest sites. Individuals reacted to experimental surface blasts 120-140 m from nests 3 times/d every other day during the incubation and brood-rearing periods, but the 135-decibel explosions did not affect reproduction or territory re-occupancy (Holthuijzen et al. 1990; Steenhof 2020).

Additionally, reproductive success for birds of prey is linked to prey availability (Murphy 1975, McIntyre 2012). Habitat for prey species of raptors can be degraded from loss and changes in vegetation (see Vegetation section 3.2.2) by motorized routes, resulting in habitat fragmentation, direct mortality by vehicles and disturbance (Ouren et al. 2007). These impacts, over time, can result in a decrease of populations of prey species, which can impact the reproductive success of birds of prey and consequently, population numbers of birds of prey as well.

Golden Eagle: Currently, 29 miles of routes lie within 0.5 mile of golden eagle breeding territories. Of these miles, 24 are currently designated open to public motorized use, occurring at a density of 0.84 mi/mi2. Twenty-two nesting territories intersect the 29 miles of routes. The No Action Alternative would continue existing adverse effects to golden eagle nesting behavior and prey species, and these effects would increase as public motorized and non-motorized use of routes increases over time in the TMA.

Ferruginous Hawk: Currently, 31 miles lie within 0.5 mile of potential ferruginous hawks nesting habitat. All 31 miles are currently designated open, occurring at a density of 1.74 mi/mi^2 within 0.5 mile of nesting habitat. Eighteen historical territories intersect the 31 miles of routes. The No Action Alternative would continue existing adverse effects to ferruginous hawk nesting behavior and prey species, and these effects would increase as public motorized use of routes increases over time in the TMA.

Prairie Falcon: Currently, 50 miles of routes lie within 0.5 mile of prairie falcon breeding territories. Of these miles, 42 are currently designated open to public motorized use, occurring at a density of 1.05 mi/mi2 within 0.5 mile of known nests. Eighty territories intersect the 50 miles of routes. The No Action Alternative would continue existing adverse effects to prairie falcons, and these effects would continue to increase as public motorized use of routes increases over time in the TMA.

Migratory Birds

Potential impacts to wildlife are specified in terms of the following impact indicators:

- Change in miles of motorized routes
- Density of motorized routes within vegetative communities

Routes fragment habitat, and create habitat edge effects, modifying the habitat in favor of species that use edges. In some locations, increased water runoff from routes produces lush vegetation "edge effects," which attracts birds for breeding, nesting, or foraging activities (Clark and Karr 1979). The attraction of bird species to these edge habitats can lead to greater risk of mortality by collisions with vehicles (Mumme et al. 2000). Surveys of songbirds in two National Forests of northern Minnesota found 24 species of birds more abundant along roads than away from them (Hanowski and Niemi 1995). Close to half these species were associated with edges, including birds like crows and blue jays that use roads as corridors to find food. Increasing edge diversity of birds could negatively affect interior species abundance (Anderson et al. 1977). Vehicular traffic is also a source of noise that has the potential for disturbing wildlife along any type of road or trail (Bowles 1995). Traffic noise has been documented to lead to significant reductions in breeding bird densities (Reijnen et al. 1995). A study of sagebrush-obligate passerines in Wyoming indicates a 39%–40% reduction in sagebrush obligates within 100 meters of dirt roads with low traffic volumes (7–10 vehicles per day) (Ingelfinger and Anderson 2004), which could result in changes in species composition and decreased fitness.

Disturbance and soil compaction along routes, along with seed dispersal by vehicles, increase the potential for establishment of invasive, non-native, and other early successional plants (Adams et al. 1982; Prose et al. 1987). Weed proliferation decreases the quality of migratory bird habitat by reducing native vegetative cover.

Currently, 446 miles of inventoried routes occur at a density of 1.77 mi/mi^2 across the TMA. Average route density in big sagebrush and mixed shrubland communities is 1.66 mi/mi^2. Average route density in salt desert shrub communities is 2.21 mi/mi^2, and route density in exotic annual communities is 1.72 mi/mi^2 (Table B-10). The No Action Alternative does not improve current conditions, as habitat would remain fragmented, and disturbance via motorized recreation is expected to increase over time. Areas of refuge would remain the same with this alternative, and there would continue to be net adverse effects to breeding, nesting, and successful fledging. Impacts on migratory bird species would continue to include energetic costs, behavioral changes (feeding, breeding, sheltering), loss of fitness (survival, growth, reproduction rates), site avoidance, and others.

Big Game

The analysis area for big-game species consists of the footprint of the route network. Potential impacts to wildlife are specified in terms of the following impact indicators:

- Change in miles of motorized routes in habitat types
- Density of motorized routes in habitat types

Routes disturb big-game species with noise from human motorized recreation, fragment habitat, create barriers to movement, and allow easier access for hunters. High road densities are associated with a variety of negative human effects on several wildlife species (Brocke et al.

1988). Increases in illegal hunting pressure, facilitated by roads, also negatively affects populations. Moose, wolves, caribou, pronghorn, mountain goat, and bighorn sheep have been shown to be particularly vulnerable to this kind of predation (Lyon 1985; Wisdom et al. 2000). Ungulates have been shown to alter their patterns of foraging and spatial use of habitat and have had diminished reproductive output as a result of disturbance from motorized recreation (Yarmoloy et al. 1988), and this disturbance can be directly related to volume of traffic on routes. Noise and human presence can disturb and displace wintering big-game animals, leading to increased physiological stress during a time when ungulates are often already stressed from low temperatures, deep snow, or food shortages (Canfield et al. 1999). A route density threshold of 1.0 mi/mi^2 has been determined to be the maximum for a naturally functioning landscape containing sustained populations of large mammals (Forman and Hersperger 1996).

Pronghorn: Approximately 255 miles are currently open to public motorized vehicle use across summer pronghorn habitat within the TMA at a density of 1.61 mi/mi2. Of the routes, 255 miles occur in winter habitat areas at a density of 1.61 mi/mi2. Route densities in both these habitat types are over the 1.0 mi/mi2 threshold. This could result in continued avoidance of the few higher volume routes resulting in lowered winter survival due to disturbance within winter habitats where routes remain accessible during the wintering period. Populations of pronghorn would continue to be adversely impacted by motorized routes and human disturbance facilitated by access via motorized routes.

3.4.2.2 Impacts of Alternative B

Given the complexity and the number of wildlife species analyzed, reference the summary Table B-25 in Appendix B for Alternative B. The closure of 223 mile of motorized routes under Alternative B would provide long-term benefits to wildlife species found within the TMA by reducing habitat fragmentation, disturbance, and likelihood of direct mortality from vehicles. Route density would be reduced to 0.73 mi/mi^2, well below the 1.0 mi/mi^2 maximum threshold for a naturally functioning landscape containing sustained populations of large mammals (Forman and Hersperger 1996). Route closures can create patches of contiguous habitat without routes, which act as refuge areas for wildlife to complete necessary life-history events (such as breeding) without disturbance (such as noise) associated with motorized recreation. There would also be an overall reduction in route density across the TMA, which would facilitate easier movement of wildlife throughout the area, increasing fitness and enhancing gene flow by reducing barriers. Small-mammal populations would increase in areas without routes, which would benefit raptor species and other predators inhabiting the area.

Fisheries

Under Alternative B, less than 1 mile of routes, consisting of both open to public motorized use and authorized use only, would be within 300 feet of redband trout habitat within the Snake River and its tributaries, with no crossings. Designations under Alternative B would result in greater diversity of aquatic invertebrates, algae, amphibians, and fish in impacted streams and rivers across the TMA. Redband trout habitat impacts would be reduced commensurate with the closure to public motorized use of over 3 miles of routes within 300 feet of redband trout habitat, which could facilitate improvements in fish movement, gene flow, and invertebrate assemblage. Alternative B would reduce fine sediment loads and would lead to improved fish reproduction, growth, a decrease in mortality, and a beneficial effect to habitat quality for redband trout.

Birds of Prey

Golden Eagle: Under Alternative B, of the 29 miles of routes currently within 0.5 mile of golden eagle breeding territories, 6 miles would be designated as closed. Of the retained routes occurring within the 0.5-mile buffer zone, 5 miles would be designated as authorized use only, 9 miles would be designated as authorized use only and subject to seasonal closure from January 15 – July 31, and 3 miles of routes to motorized use would be subject to seasonal closures for raptor nesting from January 15- July 31. During seasonal closures, which would occur from January 15 to July 31, routes open to public motorized use would occur at a density of 0.22 mi/mi2, a 74% decrease from current conditions. Alternative B would substantially reduce human disturbance within golden eagle breeding territories as well as reduce fragmentation of prey species habitat within breeding territories, which could potentially improve reproductive success over the long-term. Routes that are retained as open to public motorized use would continue to adversely affect golden eagles and important prey species and would likely increase over time as use is projected to increase in the TMA. Alternative B would reduce overall disturbance of golden eagles during nesting by restricting motorized and non-motorized access via designated trails, but it does not reduce the potential for non-motorized recreationists to enter breeding territories via cross-country travel.

Ferruginous Hawk: Alternative B would close 14 miles of the existing 31 open miles of routes within 0.5 mile of potential ferruginous hawk nesting habitat, resulting in a decrease in density routes open to public motorized use of 63%, to 0.65 mi/mi^2. Alternative B would moderately reduce human disturbance within potential ferruginous hawk nesting habitat as well as reduce fragmentation of prey species habitat within nesting habitat, which would likely improve the quality of nesting habitat over the long-term. Routes that are retained as open to public motorized use would continue to adversely affect ferruginous hawks and important prey species and would likely increase over time as use is projected to increase.

Prairie Falcon: Under Alternative B, of the 50 miles of routes currently within 0.5 mile of prairie falcon breeding territories, 15 miles would be designated as open, and 16 miles designated as closed. Of the 34 miles of retained routes that would occur within the 0.5-mile buffer zone, 19 miles would be designated as authorized use only. Routes open to public motorized use would occur at a density of 0.31 mi/mi2, a 70% decrease from current conditions. Alternative B would substantially reduce human disturbance of prairie falcon nests as well as reduce habitat fragmentation of prey species habitat within breeding territories, which could potentially improve reproductive success over the long-term. Routes that are retained as open to public motorized use would continue to adversely affect prairie falcons and important prey species and would likely increase as use is projected to increase into the future.

Migratory Birds

This alternative would provide long-term benefits to migratory birds by closing 223 miles of existing inventoried routes, reducing the density of designated motorized routes to 0.73 mi/mi^2 across the TMA (refer to Table B-12 in Appendix B, Alternative B Route Density in General Vegetation Cover Types of the TMA, for route density across specific habitats). Average route density in big sagebrush and mixed shrubland communities is reduced to 0.85 mi/mi^2. Average route density in salt desert shrub communities is reduced to 1.1 mi/mi^2, and route density in

exotic annual communities is reduced to 0.94 mi/mi^2 (Table B-12). This would result in a decrease in habitat fragmentation and levels of disturbance would decrease from current levels, benefitting migratory birds in the TMA by creating contiguous tracts of available habitat. This would increase areas of refuge, and net beneficial effects to breeding, nesting, and fledging would potentially occur over the long-term. Reproductive success, diversity, and density of birds would be expected to increase in areas of route closure over the long-term.

The remaining 225 miles of routes that would be designated for motorized use would continue to impact migratory birds and their habitats, as portions of habitat would remain fragmented and levels of disturbance via motorized recreation on retained routes is expected to increase over time. There would continue to be adverse effects to breeding, nesting, and successful fledging along these routes. Impacts on migratory bird species would continue to include energetic costs, behavioral changes (feeding, breeding, sheltering), loss of fitness (survival, growth, reproduction rates), site avoidance, and others.

Big Game

Pronghorn Antelope: Under Alternative B, there would be the greatest reduction in miles of motorized routes that have the potential to disturb big-game species with noise, habitat fragmentation, and barriers to movement. Approximatley141 miles of routes, would be designated as open to motorized vehicle use within pronghorn summer and winter habitat, at a density of 0.89 mi/mi^2 (Table B-25). Route densities in both these habitat types are below the 1.0 mi/mi^2 threshold, most importantly within winter habitat, and access to this habitat would be reduced by 45% under this alternative compared to Alternative A. The reduction in disturbance and increase in contiguous areas of habitat would have a long-term beneficial impact on pronghorn antelope and other big game species in the TMA. Retained motorized routes would still allow for the potential for pronghorn to be disturbed and harassed by humans. Routes, particularly higher volume routes, could continue to act as movement barriers and contribute to habitat fragmentation.

3.4.2.3 Impact of Alternative C

Given the complexity and the number of wildlife species analyzed, reference the summary Table B-26 in Appendix B for Alternative C. The closure of 163 miles of motorized routes under Alternative C would provide moderate, long-term benefits to wildlife species found within the TMA by reducing habitat fragmentation, disturbance, and likelihood of direct mortality from vehicles. Route density would be reduced to 0.93 mi/mi^2, below the 1.0 mi/mi^2 maximum threshold for a naturally functioning landscape containing sustained populations of large mammals (Forman and Hersperger 1996). Route closures can create patches of contiguous habitat without routes, which act as refuge areas for wildlife to complete necessary life-history events (such as breeding) without disturbance (such as noise) associated with motorized recreation. There would also be an overall reduction of route density across the TMA, which would facilitate easier movement of wildlife throughout the area, increasing fitness and enhancing gene flow by reducing barriers. Small-mammal populations would increase in areas without routes, which would benefit raptor species and other predators inhabiting the area.

Fisheries

Under Alternative C, 2 miles of routes, consisting of both open to public motorized use and authorized use only, are within 300 feet of redband trout habitat within the Snake River and its

tributaries. Designations under Alternative C could result in improved diversity of aquatic invertebrates, algae, amphibians, and fish in impacted streams and rivers across the TMA. Redband trout habitat impacts would be reduced commensurate with the closure to public motorized use of 2 miles of routes within 300 feet of redband trout habitat, which could facilitate improvements in fish movement, gene flow, and invertebrate assemblage. Closed routes would no longer contribute sediment and contaminants into waterways and therefore turbidity in impacted waterways would be lessened, water temperature would regulate through regrowth of vegetation, and no longer cause continuing changes to the structure of in-stream habitats, such as pools. Alternative C would reduce fine sediment loads and would lead to improved fish reproduction, growth, and a decrease in mortality for both redband trout.

Birds of Prey

Golden Eagle: Under Alternative C, of the 29 miles of routes currently within 0.5 mile of golden eagle breeding territories, 1 mile would be designated as closed. Of the retained routes occurring within the 0.5-mile buffer zone, 5 miles would be designated as authorized use only, 7 miles would be designated as non-motorized, and 3 miles of motorized routes would be subject to seasonal closures during the raptor nesting season. During seasonal closures, which would occur from January 15 to July 31, routes open to public motorized use would occur at a density of 0.40 mi/mi2, a 52% decrease from current conditions. Alternative C would reduce human disturbance within golden eagle breeding territories, as well as reduce fragmentation of prey species habitat within breeding territories, which could potentially improve reproductive success over the long-term. Routes that are retained as open to public motorized use would continue to adversely affect golden eagles and important prey species and would likely increase over time as use is projected to increase. While Alternative C would reduce overall disturbance of golden eagles during nesting by restricting motorized access, which can contribute to non-motorized types of disturbances if passengers exit the vehicle, it does not reduce the potential for non-motorized recreationists from utilizing the routes subject to seasonal closure or entering breeding territories via cross-country travel.

Ferruginous Hawk: Alternative C would close 8 miles of the existing 31 open miles of routes within 0.5 mile of potential ferruginous hawk nesting habitat, resulting in a decrease in density of routes open to public motorized use of 51%, to 0.86 mi/mi^2. Alternative C would moderately reduce human disturbance within potential ferruginous hawk nesting habitat as well as reduce fragmentation of prey species habitat, which would likely improve habitat quality over the long-term. Routes that are retained as open to public motorized use would continue to adversely affect ferruginous hawks and important prey species and would likely increase over time as use is projected to increase.

Prairie Falcon: Under Alternative C, of the 50 miles of routes currently within 0.5 mile of prairie falcon breeding territories, 24 miles would be designated as open and 4 miles designated as closed. Of the retained routes occurring within the 0.5-mile buffer zone, 11 miles would be designated authorized use only, and 12 miles would be designated as non-motorized. Routes open to public motorized use would occur at a density of 0.49 mi/mi2, a 53% decrease from current conditions. Alternative C would moderately reduce human disturbance within prairie falcon breeding territories as well as reduce fragmentation of prey species habitat., which could potentially improve reproductive success over the long-term. Routes that are retained as open to

public motorized use would continue to adversely affect prairie falcons and important prey species and would likely increase over time as use is projected to increase.

Migratory Birds

This alternative would provide moderate, long-term benefits to migratory birds by closing 163 miles of existing inventoried routes, reducing the density of designated motorized routes to 0.93 mi/mi^2 across the TMA (refer to Table B-14 in Appendix B, Alternative C Route Density in General Vegetation Cover Types of the TMA, for route density across specific habitats). Average route density in big sagebrush and mixed shrubland communities is reduced to 1.04 mi/mi^2. Average route density in salt desert shrub communities is reduced to 1.36 mi/mi^2, and route density in exotic annual communities is reduced to 1.13 mi/mi^2 (Table B-12). This would result in a decrease in habitat fragmentation and levels of disturbance would decrease from current levels, benefitting migratory birds in the TMA by creating contiguous tracts of available habitat. This would increase areas of refuge, and net beneficial effects to breeding, nesting, and fledging would potentially occur over the long-term. Reproductive success, diversity, and density of birds would be expected to increase in areas of route closure over the long-term.

The 285 miles of routes that would be designated for motorized use would continue to impact migratory birds and their habitats, as portions of habitat would remain fragmented and levels of disturbance via motorized recreation on retained routes is expected to increase over time. There would continue to be adverse effects to breeding, nesting, and successful fledging along these routes. Impacts on migratory bird species would continue to include energetic costs, behavioral changes (feeding, breeding, sheltering), loss of fitness (survival, growth, reproduction rates), site avoidance, and others.

Big Game

Pronghorn Antelope: Under Alternative C, there would be a moderate reduction in miles of motorized routes that have the potential to disturb big-game species with noise, habitat fragmentation, and create barriers to movement. Approximately 169 miles of routes, would be designated as open to motorized vehicle use within pronghorn summer and winter habitat, at a density of 1.07 mi/mi^2 (Table B-26). Access to winter habitat would be reduced by 34% compared to Alternative A. The reduction in disturbance and increase in contiguous areas of habitat would have a long-term beneficial impact on pronghorn antelope and other big game species in the TMA. Retained motorized routes would still allow for the potential for pronghorn to be disturbed and harassed by humans. Routes, particularly higher volume routes, could continue to act as movement barriers and contribute to habitat fragmentation.

3.4.2.4 Impacts of Alternative D

Given the complexity and the number of wildlife species analyzed, reference the summary Table B-27 in Appendix B for Alternative D. The closure of 77 miles of motorized routes under Alternative D would provide minor, long-term benefits to wildlife species within the TMA by reducing habitat fragmentation, disturbance, and likelihood of direct mortality from vehicles. Route density would be reduced to 1.21 mi/mi^2, which is above the threshold for a naturally functioning landscape containing sustained populations of large mammals (Forman and Hersperger 1996). Route closures can create patches of contiguous habitat without routes, which act as refuge areas for wildlife to complete necessary life-history events (such as breeding) without disturbance (such as noise) associated with motorized recreation. There would also be an

overall minor reduction of route density across the TMA, which would facilitate easier movement of wildlife throughout the area, increasing fitness and enhancing gene flow by reducing barriers. Small-mammal populations would increase in areas without routes, which would provide benefits to raptor species and other predators inhabiting the area.

Fisheries

Under Alternative D, 2 miles of routes, consisting of both open to public motorized use and authorized use only, are within 300 feet of redband trout habitat within the Snake River and its tributaries. Alternative D would slightly reduce sedimentation and improve water quality, improving fish habitat within the TMA.

Designations under Alternative D would result in a minor improvement in diversity of aquatic invertebrates, algae, amphibians, and fish in impacted streams and rivers across the TMA. Closed routes would no longer contribute sediment and contaminants into waterways and therefore turbidity in impacted waterways would be lessened, water temperature would regulate through regrowth of vegetation, and no longer cause continuing changes to the structure of in-stream habitats, such as pools. Alternative D would reduce fine sediment loads and would lead to improved fish reproduction, growth, and a decrease in mortality for both redband trout.

Birds of Prey

Golden Eagle: Under Alternative D, of the 29 miles of routes currently within 0.5 mile of golden eagle breeding territories, one third of a mile would be designated as closed. Of the retained routes occurring within the 0.5-mile buffer zone, 4 miles would be designated as authorized use only, 5 miles would be designated as non-motorized, and 5 miles of motorized routes would be subject to seasonal closures during the raptor nesting season. During seasonal closures, routes open to public motorized use would occur at a density of 0.55 mi/mi2, a 35% decrease from current conditions. Alternative D would reduce human disturbance within golden eagle breeding territories through seasonal closures but would not reduce fragmentation of prey species habitat.. Overall, this alternative may have a minor effect on reproductive success through reductions in disturbance during the nesting season. Routes that are retained as open to public motorized use would continue to adversely affect golden eagles and important prey species and would likely increase over time as use is projected to increase in the TMA. While Alternative D would reduce overall disturbance of golden eagles during the nesting season by restricting motorized access, which can contribute to non-motorized types of disturbances if passengers exit the vehicle, it does not reduce the potential for non-motorized recreationists from utilizing the routes subject to seasonal closure or entering breeding territories via cross-country travel.

Ferruginous Hawk: Alternative D would close 4 miles of the existing 31 open miles of routes within 0.5 mile of potential ferruginous hawk nesting habitat, resulting in a decrease in route density of 30%, to 1.21 mi/mi^2. Alternative D would moderately reduce human disturbance within ferruginous hawk nesting habitat as well as reduce fragmentation of prey species habitat, which would likely improve the quality of nesting habitat.

Prairie Falcon: Under Alternative D, of the 50 miles of routes currently within 0.5 mile of prairie falcon breeding territories, 34 miles would be designated as open, and 1 mile designated as closed. Of retained routes occurring within the 0.5-mile buffer zone, 7 miles would be designated authorized use only and 8 miles would be designated as non-motorized. Routes open to public

motorized use would occur at a density of 0.68 mi/mi^2, a 35% decrease from current conditions. Alternative D would provide a minor reduction in human disturbance within prairie falcon breeding territories as well as reduce fragmentation of prey species habitat, which could potentially improve reproductive success over the long-term. Routes that are retained as open to public motorized use would continue to adversely affect prairie falcons and important prey species and would likely increase over time as use is projected to increase.

Migratory Bird*s*

This alternative would provide minor, long-term benefits to migratory birds by closing 77 miles of existing inventoried routes, reducing the density of designated motorized routes to 1.21 mi/mi^2 across the TMA (refer to Table B-16 in Appendix B, Alternative D Route Density in General Vegetation Cover Types of the TMA, for route density across specific habitats). Average route density in big sagebrush and mixed shrubland communities is reduced to 1.36 mi/mi^2. Average route density in salt desert shrub communities is reduced to 1.8 mi/mi^2, and route density in exotic annual communities is reduced to 1.45 mi/mi^2 (Table B-12). This would result in a minor decrease in habitat fragmentation and levels of disturbance from current levels, benefitting migratory birds in the TMA by creating contiguous tracts of available habitat. This would increase areas of refuge, and net beneficial effects to breeding, nesting, and fledging would potentially occur over the long-term. Reproductive success, diversity, and density of birds would be expected to increase in areas of route closure over the long-term.

The 371 miles of routes that would be designated for motorized use would continue to impact migratory birds and their habitats, as portions of habitat would remain fragmented and levels of disturbance via motorized recreation on retained routes is expected to increase over time. There would continue to be adverse effects to breeding, nesting, and successful fledging along these routes. Impacts on migratory bird species would continue to include energetic costs, behavioral changes (feeding, breeding, sheltering), loss of fitness (survival, growth, reproduction rates), site avoidance, and others.

Big Game

Pronghorn Antelope: Under Alternative D, there would be a moderate reduction in miles of motorized routes that have the potential to disturb big-game species with noise, habitat fragmentation, and create barriers to movement. Approximately 213 miles of routes, would be designated as open to motorized vehicle use within pronghorn summer and winter habitat, at a density of 1.35 mi/mi^2 (Table B-27). Access to winter habitat would be reduced by 16% compared to Alternative A, however route density would still be greater than the 1.0mi/mi^2 threshold. The reduction in disturbance and increase in contiguous areas of habitat would have a long-term beneficial impact on pronghorn antelope and other big game species in the TMA. Retained motorized routes would still allow for the potential for pronghorn to be disturbed and harassed by humans. Routes, particularly higher volume routes, could continue to act as movement barriers and contribute to habitat fragmentation.

3.5 Issue 5: Cultural Resources- How would the designated travel route network impact cultural resources in the TMA?

3.5.1 Affected Environment

Cultural resources are defined as specific locations of human activity, occupation, or traditional use identifiable through field inventory, historical documentation, or oral evidence. The term includes archaeological, historic, and architectural sites and structures, as well as places with traditional cultural or religious importance within a social or cultural group. Relevant laws, ordinances, EOs, policies, regulations and agreements other than NEPA include the American Antiquities Act of 1906 (16 USC 431–433); National Historic Preservation Act (NHPA) as amended of 1966 (16 USC 470 et seq.); EO 11593 Protection and Enhancement of the Cultural Environment (May 13, 1971); American Indian Religious Freedom Act of 1978 (92 Stat. 469: 42 USC 1996); Archaeological Resources Protection Act of 1979 (16 USC 470aa–470mm); Native American Graves Protection and Repatriation Act of 1990 (25 USC 3001–3013); and EO 13007 Indian Sacred Sites (May 24, 1996); EO 13287 Preserve America (March 3, 2003); and the Federal Land Policy and Management Act of 1976 (FLPMA) (90 Stat. 2743; 43 USC 1701).

The most relevant direction in terms of considering the effects of the proposed project on cultural resources is the National Historic Preservation Act (NHPA) as amended of 1966 (16 USC 470 et seq.) The NHPA, among other things, requires federal agencies to consider the effects of an undertaking on historic properties, and established the National Register of Historic Places (NRHP). The implementing regulations (36 CFR 800) of the NHPA define historic properties as "…any prehistoric or historic district, site, building, structure or object included in, or eligible for inclusion in the National Register of Historic Places." The term "historic properties" also includes properties of traditional religious or cultural importance to Native Americans.

For a resource to be considered eligible for the NRHP, it must be at least 50 years old, possess integrity of location, design, setting, materials, workmanship, feeling, and association, and meet one of four criteria. Historic properties are those:

A. that are associated with events that have made a significant contribution to the broad patterns of our history; or

B. that are associated with the lives of persons significant in our past; or

C. that embody distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguished entity whose components may lack individual distinction; or

D. that have yielded, or may be likely to yield, information important in prehistory or history.

The NCA South TMA analysis area, as identified in this document, is a landscape that has been associated with humans for thousands of years. Occupation in the area began in the Paleoindian Tradition (13,500 to 8,000 B.P.) of the Late Pleistocene and Early Holocene as small groups of highly mobile hunter-gatherers made their way through the landscape (Plew 2016). Paleoindian occupations are generally recognized by the presence of large lanceolate projectile points and/or

extinct megafauna, although they did also exploit other faunal and floral resources. People of the Archaic Tradition (8,000 to 250 B.P) hunted both large and small game and exploited more plant resources. Artifact assemblages contain smaller stemmed and notched project points, ground stone, bone tools, and sometimes ceramics. Occupations found in caves, rockshelters, and open-air sites are indicative of mobile populations following resources as they become available (Plew 2016). Euro-Americans began arriving in the nineteenth century after Idaho was acquired in the Louisiana Purchase and encountered Northern Shoshone, Shoshone Bannock, Northern Paiute, and Nez Perce peoples who were eventually moved to reservations. Mining, farming, and ranching all became important economic drivers of settlement of Idaho; today, agriculture and ranching remain prominent occupations (Schwantes 1991).

The NCA South TMA has approximately 64 miles of the Oregon National Historic Trail (NHT) that traverses the analysis area, 18 of those miles overlap Highway 78. The Oregon Trail was designated by Congress in 1978. The Oregon Trail was a key component of the American westward expansion in the Nineteenth Century, a period of Manifest Destiny. The Oregon Trail demonstrated the feasibility of large-scale movement by wagon across great distances and over the Rocky Mountains, once perceived as an impassable barrier. The Oregon Trail (and other Historic Trails) facilitated the settlement of a large portion of the western United States, fostered commerce, and encouraged the development of a transportation and communication network that brought the country closer together. Of the various western trails used by fur traders, missionaries, gold seekers, and emigrants, the Oregon Trail became the most famous (National Park Service 1999). The Oregon NHT corridor is managed as a Special Recreation Management Area (SRMA) under the Snake River Birds of Prey RMP (2008c) and the trail corridor is 0.5 miles wide.

Class III cultural resource surveys through 2022 have inventoried an estimated 10,857 acres of BLM-managed land (10% of the TMA). For the travel management plan discussed in this document, a total of 1,603 acres was surveyed within the TMA (Fowler 2017). This survey area represents a sample of the routes analyzed; routes (and a 30-meter area around each route) were selected for survey in areas which were highly sensitive for cultural resources. Current impacts to sites within the survey area were recorded, and monitoring was recommended for many sites in order to track new or continuing impacts (Fowler 2017).

These surveys have identified approximately 472 cultural resources located within the TMA (see Table B-28 in Appendix B for a breakdown of type and National Register of Historic Places [NRHP] listing status). Additionally, one NRHP-listed district, the Guffey Butte - Black Butte Archaeological District, is within the TMA analysis area. Of the 472 resources within the TMA, 17 are within the Guffey Butte/Black Butte - Black Butte Archaeological District and are listed on the NRHP; these include Native American lithic scatters, petroglyphs, rock circles, rockshelters, and hunting blinds. Outside of the archaeological district, the NRHP- eligible sites are similar to those included within. Of the sites not listed on the NRHP, the Native American sites consist of lithic scatters, caches, camps, habitation sites, rockshelters, petroglyphs, and hunting blinds. The historic sites/properties consist of historic artifacts or structures, arborglyphs, roads, cairns, fences, dams and/or reservoirs, ranching sites, rock features, and a Civilian Conservation Corps camp.

3.5.2 Environmental Impacts

3.5.2.1 Impacts of Alternative A

The analysis area for impacts to cultural resources consists of the motorized route network within the TMA. Potential impacts to cultural resources are specified in terms of the following impact indicators:

- Number of sites intersected by routes open to public motorized use
- Number of sites within 0.25 miles of routes open to public motorized use
- Change in miles of non-highway routes within the Oregon NHT SRMA corridor (0.5 miles wide)

Under the No Action Alternative, there would be no changes to management of the routes within the TMA. OHV use has been identified as a major source of damage to archaeological sites and historic properties (Lyneis et al. 1980; Schneider 2005). The 1979 study (Lyneis et al. 1980) noted that damage to archaeological sites by vehicles occurred most frequently when a site was close to a road or campground. Linear and non-linear archaeological sites that are currently being impacted by travel on 448 miles of open routes would continue to be impacted. Continued impacts from the No Action Alternative are considered in terms of direct impacts (known archaeological sites that are intersected by the route network) and indirect impacts (sites within a 0.25-mile buffer of the routes).

Thirty-three known NRHP-eligible archaeological sites, two NRHP-listed sites, and six unevaluated sites are intersected by routes open for public motorized use and would continue to be impacted. In addition, 15 miles of open routes run through the Guffey Butte - Black Butte Archaeological District. There are 443 known archaeological sites, including those already discussed, found within 0.25 miles of the existing routes. These sites may be impacted if individuals leave motorized routes on foot. Of the 443 known archaeological sites, 300 are listed in or eligible to be listed in the NRHP, or their NRHP status is unevaluated or unknown. These sites would continue to be impacted by the current management.

Fifty-four miles of non-highway routes are designated as open to motorized use within the Oregon NHT SRMA corridor. There would be no route closures or limitations; thus, the No Action Alternative would conflict with the BLM's management actions for the Oregon NHT SRMA of protecting the visual and historical values of the Oregon NHT (BLM 2008c). Though there is not an established limit for the number or density of routes that may occur within the Oregon NHT SRMA the visual and historical values of the Oregon NHT would not be improved under the No Action Alternative. This would impact the Oregon NHT as well as conflict with the management objectives of the Snake River Birds of Prey RMP (2008c).

3.5.2.2 Impacts of Alternative B

Alternative B would result in a reduction in impacts to cultural resources from current conditions (also described in the No Action Alternative above). The use of open and authorized use roads would continue to impact 42 NRHP-listed, eligible, or unevaluated sites. Fifteen sites would benefit from road closures or non-motorized designations (see Table B-29 in Appendix B for sites intersected by designated routes), and three miles of road would be closed within the Guffey Butte - Black Butte Archaeological District. Additionally, there would be fewer impacts from

Alternative B than the No Action Alternative; 95 of the 443 known archaeological sites within 0.25 miles of the route network would be along closed routes and would be less likely to be impacted by motorized vehicle use. Of those 95 known archaeological sites, 65 are listed in or eligible for listing in the NRHP, or their NRHP status is unevaluated/unknown.

Access to areas within the TMA where 65 known NRHP-eligible or unevaluated archaeological sites are located, including those intersected by routes, would be limited by the closure of 223 miles of routes. Three miles of roads within the Guffey Butte - Black Butte Archaeological District would be closed. Thus, Alternative B would provide beneficial impacts to cultural resources.

Under Alternative B, 27 miles of non-highway routes would be designated as closed, in addition to 2 miles of routes designated as limited to non-motorized travel within the Oregon NHT SRMA corridor. This would reduce impacts to the Oregon NHT from motorized use by approximately 51% compared to the No Action Alternative. This reduction in routes open for motorized use within the Oregon NHT SRMA would assist the BLM in protecting the visual and historical resources of Oregon NHT, per the management objectives of the Snake River Birds of Prey RMP (2008c). Further, the closure of 27 miles of non-highway routes within the Oregon Trail SRMA would reduce the likelihood of humans disturbing (or looting) both known and unknown historic resources along those 27 miles of routes within the SRMA that have been closed. This alternative would provide moderate beneficial impacts, via increased protection, to the Oregon NHT SRMA.

3.5.2.3 Impact of Alternative C

Under Alternative C, open or authorized use roads would continue to impact 36 NRHP-listed, eligible, or unevaluated sites. Twenty-one sites would benefit from road closures or non-motorized designations (see Table B-30 in Appendix B for sites intersected by designated routes), and within the Guffey Butte - Black Butte Archaeological District, 7 miles of routes would be designated closed or non-motorized. Of the 443 known archaeological sites within the 0.25-mile buffer, 142 would be along closed routes; 116 are listed in or eligible for listing in the NRHP, or their NRHP status is unevaluated/unknown. Thus, Alternative C would provide moderate beneficial impacts to cultural resources.

Approximately 7 miles of non-highway routes would be designated as closed, in addition to 13 miles of routes designated as limited to non-motorized travel within the Oregon NHT SRMA corridor. This would reduce impacts to the Oregon NHT from motorized use by approximately 36% compared to the No Action Alternative. This reduction in routes open for motorized use within the Oregon NHT SRMA would assist the BLM in protecting the visual and historical resources of Oregon NHT, per the management objectives of the Snake River Birds of Prey RMP (2008c). Further, the closure of 7 miles of non-highway routes within the Oregon NHT SRMA would reduce the likelihood of humans disturbing (or looting) both known and unknown historic resources along those 7 miles of routes within the SRMA that have been closed. This alternative would provide minor beneficial impacts to the Oregon NHT compared to the No Action Alternative.

3.5.2.4 Impacts of Alternative D

Under Alternative D, 15 NRHP-listed, eligible, or unevaluated sites would benefit from road closures or non-motorized designations, and 7 miles of routes would be closed or designated non-motorized within the Guffey Butte - Black Butte Archaeological District. Forty-two NRHP-eligible or unevaluated sites would still be impacted by open and authorized use roads within the TMA (see Table B-31 in Appendix B for sites intersected by designated routes). Of the 443 known archaeological sites within the 0.25-mile buffer, 80 would be along closed routes; 77 are eligible for listing in the NRHP, or their NRHP status is unevaluated/unknown. Thus, Alternative D would provide minor beneficial impacts to cultural resources. In comparison to Alternatives B and C, Alternative D would result in more adverse impacts as fewer routes would be closed and more archaeological sites would be indirectly impacted.

Approximately 3 miles of non-highway routes would be designated as closed, in addition to 6 miles of routes designated as limited to non-motorized travel within the Oregon NHT SRMA corridor. This would reduce impacts to the Oregon NHT from motorized use by approximately 16% compared to the No Action Alternative. This reduction in routes open for motorized use within the Oregon NHT SRMA would assist the BLM in protecting the visual and historical resources of the Oregon NHT, per the management objectives of the Snake River Birds of Prey RMP (2008c). Further, the closure of 3 miles of non-highway routes within the Oregon NHT SRMA would reduce the likelihood of humans disturbing (or looting) both known and unknown historic resources along those 3 miles of routes within the SRMA that have been closed. This alternative would provide the least beneficial impacts to the Oregon NHT compared to the No Action Alternative.

3.6 Issue 6: Recreation- How would the designated travel route network impact recreation opportunities, experiences, and access?

3.6.1 Affected Environment

Recreational use of the Morley Nelson Birds of Prey National Conservation Area has increased dramatically in the last 20 years. In the 1970s and 1980s, the area was primarily utilized by local residents for hunting, fishing, hiking, horseback riding, driving for pleasure, and camping. The numbers of non-local recreational visitors in the 1980s were relatively low, and ranchers, miners, and utility companies initially established the existing network of roads, though now the public primarily uses it for motorized recreation.

In the early 1990s, the population of the counties and communities surrounding the NCA South TMA analysis area began a period of remarkable growth. As the surrounding population increased, recreational demand and use of public lands grew at a dramatic rate. With the establishment of the NCA by Congress in 1993, non-local recreational visitation increased from previous levels. The combination of increasing population, wide adoption of new recreational technologies, and an extensive public lands base within easy driving distance of expanding urban populations has yielded increased recreation use on the public lands of Owyhee County.

The NCA South TMA is recognized as a popular area in southwest Idaho for quality recreation opportunities. The popularity is generally due to its proximate location to the Boise metropolitan area, cool spring/fall weather conditions and some of the highest concentrations of birds-of-prey in the world. The terrain includes hundreds of miles of interconnecting primitive roads and trails

traversing gentle to rugged hills and ridgelines, as well as the banks and canyon walls of the Snake River.

Recreation opportunities within the NCA South TMA are predominantly dispersed activities and include off-highway vehicle use, recreational shooting, dispersed camping, wildlife viewing, geocaching, horseback riding, fishing, camping, float and power boating, hiking, mountain biking, hunting, and parasailing. Recreation use is year-round with visitor use being highest in the spring and early summer months, and lowest during the winter months (BLM 2008a).

Hunting is permitted in NCA unless prohibited by Idaho Fish and Game regulations; the NCA South TMA includes portions of game management units 40, 41, and 46 (IDFG 2016). The hunting season for most big game is August through November

There are two designated recreation sites within the NCA analysis area. The Cove Recreation Site is located on C.J. Strike Reservoir and includes the only improved public camping facility in the NCA, in addition to a boat ramp, picnic facilities, fire rings, fishing docks and potable water. The Black Sands public boat ramp offers a place to launch boats into the C.J. Strike Reservoir.

3.6.2 Environmental Impacts

3.6.2.1 Impacts of Alternative A

The analysis area for impacts to recreation is the network of motorized routes that are open to public use.

Potential impacts to recreation are specified in terms of the following impact indicators:

- Changes in miles of routes available for recreational public use (e.g., rockhounding, spiritual visitor, wildlife viewing, vehicle exploring, sightseeing, hunting, and trapping)

Under the No Action Alternative, there would be no change to the existing route system or access, therefore there would be no impacts to recreational uses, such as hiking and trapping. Recreational motorized and non-motorized use (e.g., via OHVs, hiking, horseback riding, or cycling) would continue on the 448 miles of routes. Of these 448 miles of routes, approximately 428 miles are currently open to the public for motorized vehicles.. User conflicts may continue to be experienced by non- motorized users as they perceive motorized use to be un-managed and disruptive to their recreational experience (Jackson and Wong 1982). It is anticipated that recreational use would likely continue increasing over time as populations in surrounding communities grow.

3.6.2.2 Impacts of Alternative B

Under Alternative B, approximately 221 of the 448 miles of routes would be designated as closed, 72 miles of routes would be designated as limited to authorized use only, and two miles would be designated as limited to non-motorized use (295 total miles of routes no longer available for public motorized use). This would be a 66% reduction in the miles of routes available for public motorized use. Approximately four of the 153 miles of routes open to public motorized use would be closed seasonally, which would occasionally reduce the total miles available for motorized recreation. This alternative would close motorized loop opportunities to some recreation destinations, which would remain accessible via a one-way, with a return using the same route. Mountain bikers, hikers, and horseback riders could continue to use designated motorized routes (155 miles). An increase in non-motorized and non-mechanized routes would be beneficial to those types of uses and would be adverse for motorized uses.

In response to the 295 miles of routes no longer available to public motorized use, some users may shift their modes of transportation when compared to the No Action Alternative in order to continue their chosen public use. Route closures would result in site-specific impacts to recreational access and may result in adverse, moderate to major, long-term impacts since users may be required to travel longer distances or alter their mode of transportation to gain public access. A consequence of the increase in intensity of use could be the displacement of some users to other locations within the TMA or adjacent TMAs if the higher levels of use detracted from their experience (i.e., social value) and/or resulted in a sense of overcrowding. Access for public use activities such as rockhounding, wildlife viewing, vehicle exploring, sightseeing, and hunting and trapping in site-specific locations may result in adverse, moderate to major impacts due to the 66% reduction in total routes open to public motorized use but would not eliminate any of these public use activities and opportunities within the TMA.

The adverse impacts caused by limiting routes and concentrating use to motorized recreation under Alternative B would be the highest of all action alternatives. Alternative B would designate the fewest routes compared to the No Action Alternative. As this alternative provides the greatest reduction of available route miles, it can be anticipated that the intensity and level of public use of the route network would increase, as the same number of users would be concentrated on a reduced number of miles of routes. This would result in site-specific, moderate impacts to recreation from closing or limiting the most miles of routes for motorized recreation, and changes to the quality of their recreational experience would more likely be adversely affected. The beneficial impacts to non-motorized dispersed recreation would be the highest of all action alternatives.

3.6.2.3 Impact of Alternative C

Under Alternative C, approximately 132 miles of the 448 miles of routes would be designated as closed, 59 miles of routes would be designated as limited to authorized use only, and 31 miles would be designated as limited to non-motorized or non-mechanized use (222 total miles of routes no longer available for public motorized use). This would be a 50% reduction in the miles of routes available for public motorized use. Approximately seven miles of the 226 miles of routes open to public motorized use would be closed seasonally. This alternative would close motorized loop opportunities to some recreation destinations, which would remain accessible via one route. Of the 226 miles of routes that would be retained as open to public motorized use, nine miles of routes would be specifically designated for single track use. Mountain bikers, hikers, and horseback riders could continue to use designated motorized routes (257 miles). This alternative would have a moderate adverse impact to general motorized recreation, and a major beneficial impact to dispersed, non-motorized recreational activities when compared with current conditions.

3.6.2.4 Impacts of Alternative D

Under Alternative D, approximately 56 miles of routes would be closed to all motorized uses, 31 miles of routes that would be designated as limited to authorized use only, and 21 miles that would be designated as limited to non-motorized use (108 total miles of routes no longer available for public motorized use). This would be a 24% reduction in the miles of routes available for public use. Of the 341 miles of routes open to public motorized use, 12 miles would be closed seasonally. Alternative D retains motorized loop opportunities to some recreation destinations. Of the 341 miles that would be retained as open to public motorized use,

4 miles would be designated specifically for ATV/UTV use, and 42 miles would be designated specifically for single track use. Mountain bikers, hikers, and horseback riders could continue to use designated motorized routes (361 miles). This alternative would have a minor adverse impact to general motorized recreation, and a minor beneficial impact to dispersed, non-motorized recreational activities when compared with current conditions.

CHAPTER 4. CUMULATIVE EFFECTS

4.1 Analysis Parameters

This EA considers potential cumulative effects within the NCA South TMA, as well as TMAs in Idaho that are directly adjacent, such as Murphy TMP, the Grand View and NCA West TMAs and the Jarbidge RMP (see Figure A-8, Appendix A). This geographic area forms the core cumulative effects analysis area (CEAA) for most resources. The adjacent TMAs were used for the CEAA because some routes transcend the NCA South TMA and connect into systems in adjacent TMAs. Ensuring contiguous network access when moving from one TMA to another is important in maintaining viable travel across a larger area that makes sense for public use management. Additionally, route access and/or density can impact some resources (e.g., some wildlife), especially when that resource is in the outer periphery of the NCA South TMA where conditions in an adjacent TMA might contribute to those impacts. Most resources do not recognize the artificial TMA boundaries as an impediment to their movements or effects, but most resources would experience negligible effects from conditions outside of the TMAs immediately adjacent to the NCA South TMA. In terms of time frame, the cumulative effects analysis is considered over a 30-year time period. There is a high likelihood that within 30 years some level of change would occur related to travel management planning in Owyhee County that would require additional NEPA analysis, such as the development of an updated resource management plan for the Morely Nelson Snake River Birds of Prey NCA. For the purpose of this analysis, “reasonably foreseeable” actions are considered where there is an existing decision (i.e., record of decision or issued permit) and the action has not been implemented, a commitment of resources or funding, a formal proposal (i.e., a permit request) or actions that are highly probable based on known opportunities or trends. Speculative future developments are not considered.

The following analysis considers the potential effects of route designation at a landscape level, considering the existing 7,819 miles of designated or open routes in the CEAA (approximate; includes total route mileage for adjacent in-progress BLM Murphy TMP [840], NCA West TMP [1,286 miles], Grand View TMP [1,360] Jarbidge Field Office [3,885], and this NCA South TMP [448]). Additionally, because impacts are largely considered in terms of route closure and the range of miles that would be closed under the action alternatives (56 to 221 miles) is very small when considered with the total miles of existing routes in the core CEAA (7,819 miles), the cumulative effects of the action alternatives are discussed together and those of the No Action discussed separately under each resource.

Past, present, and reasonably foreseeable future projects that may have a cumulative impact when considered with the travel management plan are considered in this section (see Figure A-8 in Appendix A for CEAA map). Ongoing and reasonably foreseeable projects or actions have been identified that when combined with the proposed project may result in cumulative impacts (see Table B-32 in Appendix B). These projects span the entire extent of the TMA and nearby

region, and they range in proximity; some of these projects are not considered for all CEAAs, as they do not fall within the geographic extent of the CEAA for each resource.

4.2 Cumulative Effects by Resource

4.2.1 Soils

The CEAA for soils consists of the NCA South TMA and adjacent TMAs in Idaho because the designation of routes would only directly impact soils in proximity to routes and indirectly effect levels of disturbance within the core CEAA. Past and present disturbances associated with road construction and maintenance of the existing routes in the CEAA, ranching, agriculture, grazing, wildfire, utilities, and mineral development would continue to impact fragile and sensitive soils, contributing to erosion.

The No Action Alternative would have adverse minor cumulative impacts to soils since there would be the maximum mileage of existing inventoried routes available for motorized use within the NCA South TMA, and other existing routes in adjacent TMAs. Motorized use of existing routes in fragile soils would contribute to continued mechanical disturbance. With the existing route network remaining open under the No Action Alternative there would be an overall minor adverse cumulative impact to soils, even where restoration measures occur.

Under all action alternatives, route closures within the CEAA would benefit soils by reducing motorized vehicle use-related mechanical disturbance of soils, complementing other actions that would also contribute to soil stabilization such as restoration activities, road and trail maintenance, and sage-grouse habitat projects. Route designation, special recreation permits, and road and trail maintenance provide for maintained, managed motorized recreation that helps alleviate pressure on fragile soils.

4.2.2 Vegetation

The CEAA for vegetation consists of the NCA South TMA and adjacent TMAs in Idaho, as the designation of motorized routes could result in impacts to levels of disturbance to vegetative communities across the landscape. Past and present disturbances associated with road construction and maintenance of the existing routes in the CEAA, ranching, agriculture, grazing, wildfire, utilities, and mineral development would continue to reduce vegetative cover and could create opportunities for invasive weed establishment and spread. Future actions, such as utilities development, and projected increases in recreational motorized use would continue to disturb vegetation across the CEAA, impact habitats for special status species, and provide opportunities for invasive plants and noxious weeds to spread.

The No Action Alternative when combined with ongoing and future road and trail maintenance, other routes in adjacent TMAs and the potential for continued route proliferation and expansion into areas that were previously untraveled would result in a slight increase in habitat fragmentation, slight increase in the spread of noxious and invasive plant spread. With the existing route network remaining open under the No Action Alternative, in consideration of burned area rehabilitation projects, grazing permit renewals, and other habitat improvement projects, there would be a minor adverse change in vegetation condition though further route proliferation.

The route designation process as described in the action alternatives in the NCA South TMA as well as other BLM Idaho travel management planning, sage-grouse conservation actions, burned area rehabilitations, and on-going grazing permit renewals and restoration activities when

combined would benefit the plant communities of the CEAA by controlling habitat fragmentation, improving existing vegetation, limiting disturbance, reducing the chance of spreading of noxious and invasive plants. Controlled motorized use through route designation, special recreation permits, and road and trail maintenance will help alleviate pressure on special status plant populations, and when combined with conservation actions such wildlife fire restoration projects would improve habitat conditions for these species. BLM route closures within the CEAA would benefit the weed inventory and control programs of federal, state, and county agencies by reducing public motorized access through noxious weed sites as well as dispersal from motorized vehicles however this change would likely be slow.

4.2.3 Hydrology

The CEAA for hydrology consists of the NCA South TMA and adjacent TMAs because designation of motorized routes could result in impacts to the hydrology of the watershed. The adjacent TMAs are largely contained within the same watersheds (cataloging unit [HUC 8]); therefore, the core CEAA is an appropriate analysis area. When current motorized use is combined with other reasonably foreseeable actions such as water pipelines, fencing, mining, trail maintenance, and special recreation permits, motorized use of routes in the NCA South TMP would continue to increase and create a growing long-term, ecosystem-wide adverse impact to watershed health. Reasonably foreseeable future actions that include restoration activities, sage-grouse habitat projects, and road maintenance, along with the designation of routes in adjacent TMAs which would likely include closures of routes near water bodies, would reduce the potential for adverse impacts to watersheds.

Under the No Action Alternative, continued use of routes would result in cumulatively greater impacts to riparian areas compared to the action alternatives. Water quality, watershed-wide, could diminish due to sediment infiltration of waterways from motorized vehicle use in proximity to waterways. Streams that have not been assessed or are currently meeting water quality standards could degrade due to sediment issues, and streams that have not attained their beneficial uses would remain listed as Category 4a and/or 5 waters. With the existing route network remaining open under the No Action Alternative, there would be an overall minor adverse cumulative impact to hydrologic resources of the CEAA, even where restoration measures occur.

Under the action alternatives, designating motorized routes in the CEAA would cumulatively result in fewer impacts to riparian areas, since the overall number of stream crossings and routes in proximity to perennial and intermittent streams would be reduced in the CEAA. Current and future actions, such as development, would not likely contribute to sedimentation, as action-related disturbances would be subject to appropriate mitigations and permitting requirements that would not result in measurable adverse effects to water quality. Closure of routes would reduce stream crossings, reducing the hydro-connectivity of the trail system to the drainage systems and reducing overall potential for sedimentation of streams. When combined with other reasonably foreseeable actions, the action alternatives would have beneficial cumulative impacts, improving water quality in the long term.

4.2.4 Wildlife

The CEAA for wildlife consists of the NCA South TMA and adjacent TMAs in Idaho, as some wildlife species have the ability to move long distances such as big game or change areas of activity over time such as migratory birds and raptors. This cumulative effect analysis also

includes general wildlife and raptor prey species (e.g. Piute ground squirrels and rabbits) with more limited movement ability that occur within the TMA. Past actions such as road construction and maintenance, ranching and agriculture development, improper grazing, mineral development, wildfire and suppression, and utilities construction have degraded habitat, resulting in adverse, long-term cumulative impacts to wildlife populations and habitat. Future actions that have the potential to fragment and degrade wildlife habitat include infrastructure development and increased recreational use in the CEAA and TMA (Table B-32).

The direct and indirect impacts from the No Action Alternative would result in adverse impacts to wildlife species, as habitat degradation and fragmentation would continue or increase due to increased recreational use of the 448 miles of open routes. This increased recreational use combined with past, current, and reasonably foreseeable actions could potentially result in decreased viability of wildlife species and habitat quality over the long-term.

Under the action alternatives, the designation of a motorized route system in the TMA would result in fewer miles than the No Action alternative. When any of the action alternatives are combined with the designation of routes in adjacent TMAs, grazing permit renewals, other habitat improvement projects, there would be a reduction in the existing levels of human disturbance and habitat fragmentation compared with the No Action alternative by closing or limiting use of routes. Additionally, there would be the rehabilitation of areas of existing disturbance or degradation (e.g., grazing permit renewals designed to meet rangeland health standards) and an increase in the quality and availability of contiguous tracts of habitat throughout the CEAA. Seasonal closures of routes would benefit raptor species by reducing motorized recreation-related disturbance during critical life stages. The closure of motorized routes would reduce impacts to riparian habitat and benefit species associated with those habitats. Overall, the combination of any of the action alternatives when combined with other projects in the CEAA, would cumulatively be less than the negative impacts incurred from the implementation of the No Action alternative, and not contribute toward a decrease in viability of any wildlife species. As characterized in the direct and indirect effects analyses, any negative cumulative impacts would occur in lessening degrees from Alternative D, C, and B.

Fisheries

The CEAA for fisheries consists of the NCA South TMA and adjacent TMAs because designation of motorized routes within the TMA could result in impacts to the watershed, and watershed health can determine aquatic habitat quality. The adjacent TMAs are largely contained within the same watersheds (cataloging unit [HUC 8]); therefore, the core CEAA is an appropriate analysis area. Many of the cumulative impacts to fisheries at the CEAA scale would be similar to those described for hydrology; impacts not discussed in hydrology are discussed here.

Under the No Action Alternative, continued use of routes would result in cumulatively greater impacts to aquatic habitats from an increase in overall riparian disturbances and contribution of sediment loads into the surface drainages (and eventually streams and rivers) of the CEAA. The No Action Alternative would have adverse cumulative impacts in these areas, negating the intention of those reasonably foreseeable actions.

Under the action alternatives, the route designation and transportation planning designating motorized routes in the CEAA, restoration activities, and fuels projects would cumulatively result in fewer impacts to fisheries in the CEAA, since the overall number of stream crossings and routes in proximity to aquatic habitats would be reduced, and stabilization of soils would occur in disturbed areas, reducing the potential for sediment input. Closure of routes would reduce overall sedimentation of streams and contribute to temperature regulation where riparian vegetation may reestablish. When combined with other reasonably foreseeable actions, the action alternatives would have beneficial cumulative impacts, improving aquatic habitats in the long term.

4.2.5 Cultural Resources

The CEAA for cultural resources consists of the NCA South TMA and adjacent TMAs in Idaho, as cultural resources are generally located in static areas across the landscape, the designation of routes would only impact cultural resources in proximity (0.25 mile) to routes and indirectly within the planning area. Past, present, and future use of the NCA South TMA for recreation, ranching, agriculture, hunting, and vegetation management and wildfire suppression may have had/would have a minor impact on cultural resources within the NCA South TMA. Future actions on BLM-administered lands would be mitigated through BLM compliance with federal laws and regulations regarding cultural resources. Projected increases in retained route use resulting from the route closures of other travel management plans in the CEAA, in combination with those anticipated increases resulting from closing existing routes under the action alternatives, could further contribute to the degradation of irreplaceable cultural and historic resources in proximity to retained routes, but route designation across the NCA South TMA would also protect sensitive resources along routes that would be closed or otherwise restricted.

The No Action Alternative would contribute to cumulative impacts resulting in an adverse effect to cultural resources in the NCA South TMA. Route designation and control through closures, limiting access, and enforcement from implementing any action alternative could reduce current and future destruction to fragile cultural and historic resources; therefore, the action alternatives would limit contributions to cumulative impacts from reductions in routes open to public motorized access.

4.2.6 Recreation

There would be both beneficial and adverse cumulative effects from designation of routes under the action alternatives for the NCA South TMA, in combination with route designation in adjoining TMAs, as described below. Reasonably foreseeable future actions like special recreation permits, travel management, and land use planning would further enhance the recreation setting and opportunities by providing focused recreation management and public access for various recreation experiences. Designation of a motorized route system would reduce or alleviate impacts from higher anticipated recreation use resulting from projected population growth in the region. However, future actions such as travel management planning, mining, grazing permit renewals, and sage-grouse habitat improvement projects, when combined with the closure and limitation of routes as proposed under the action alternatives, may also adversely, cumulatively impact recreation resources. These impacts would be similar to those described under direct and indirect impacts. Thus, there would be a minor cumulative effect to recreation from surface disturbance, area and route closures, or limitation to motorized recreation, resulting in subsequent minor to moderate changes to site-specific recreation experiences. Other actions

such as wildland fire restoration projects and grazing permit renewal projects with restoration objectives may have an additive, beneficial cumulative impact to recreation and public access.

Cumulative impacts to recreation from the No Action Alternative would be beneficial and additive to motorized recreation and public access since there would be no additional route closures or limitations on 448 miles out of the approximately 7,819 total miles of the CEAA. However, there would also be adverse, additive cumulative impact to dispersed recreation since incompatible recreation opportunity and experience conflicts would continue and type of use would not be provided for on 7,819 miles of the existing route network within the CEAA.

APPENDICES

A. Figures
B. Tables
C. Acronyms and Literature Cited
D. Consultation and Coordination
E. Travel Management Plan Conformance and Applicable Statutes and Regulations
F. Travel Management Plan Implementation Guidance
G. Response to Comments NCA South TMP 2016